Outbreak File: *Sibley County*

ALEX VOS

2012

Outbreak File: *Sibley County*

A design thesis submitted to the department of
architecture and landscape architecture
of North Dakota State University

by

ALEX VOS

in partial fulfillment of the requirements
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Master of Architecture

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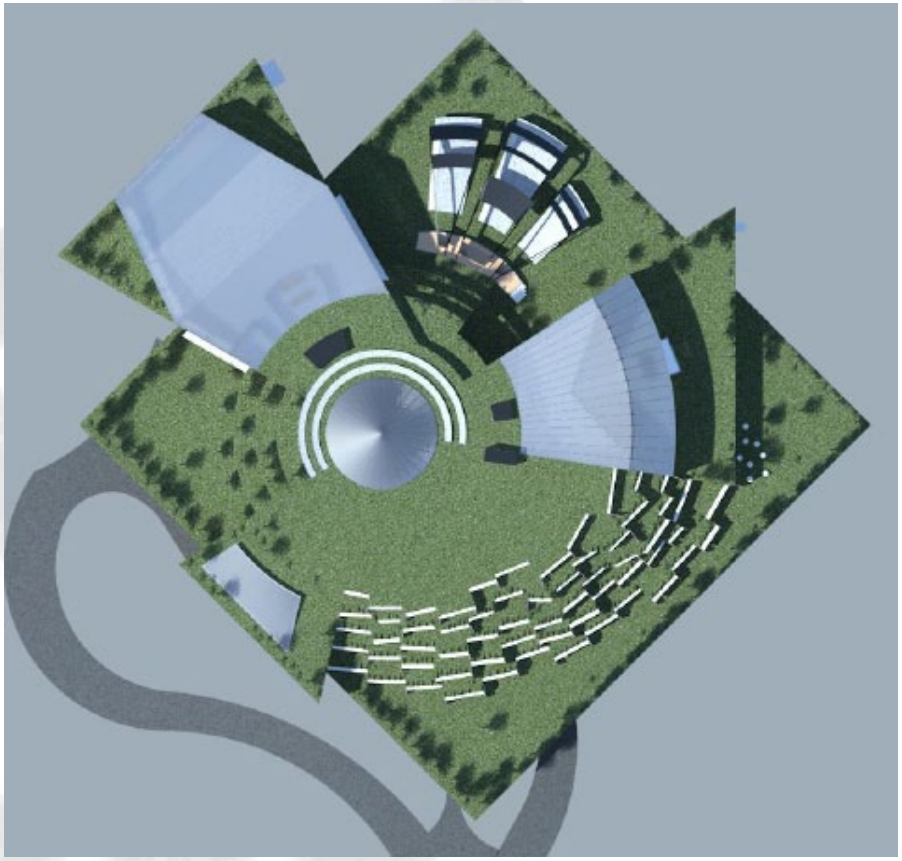
Thesis Abstract

This thesis, Outbreak File: Sibley County, researches and examines the ecological footprint in order to describe an efficient way to design and protect communities from the threat of a zombie apocalypse. Discovering how to reduce the size of a footprint in a community is the realistic goal to reach a high level of sustainability.

Zombie-proof design is essentially a new way to enforce the ability to sustain in architectural design. Through research in this thesis, the possible outcomes of an a potential zombie apocalypse, we can take the basic requirements a community needs in order to survive the threat for several years.

Located in the middle of nowehere, central Minnesota about 70 miles southwest of Minneapolis, the community shelter proposed in this thesis accomplishes the needs of a community and guarentees saftey to those who hold up in the structure through the duration of the outbreak without help of any outside sources. This community shelter, approximately 200,000 square feet, can house a small community based on the population of the local region.



Ecological footprint Sustainability Zombie

Problem **Statement**

How can we reduce our ecological footprint in order to

Survive?

Statement of *Intent*

Statement of Intent

Typology:

Community shelter

Claim:

Architects and anthropologists can determine the effect the ecological footprint of people has on the environment, and how to reduce it through successful design and protection from the zombie outbreak.

Premises:

Architects and anthropologists have the knowledge to understand what the ecological footprint is and its effect on people and the environment. With sustainable and sensitive designs, the footprint of a community can be reduced in order to protect the community and provide for it. The ecological footprint's size can be destructively large and dangerous. The larger it is, the further we need to travel to obtain our resources for growth. These designs must overcome any potential of danger and provide the ability to protect a community from the outbreak.

Theoretical Premise/Unifying Idea:

Our ecological footprint needs to be reduced in order to maintain a healthy flow of resources from the world, especially when we can no longer go out into the world as a safe means of obtaining said resources.

Justification:

While everyone likes the idea of sustainability and green design, it is more important to actually enforce it on our daily lives. When the outbreak hits, the world will no longer be able to provide for us the way we were used to. A community shelter may be the only way to protect and teach us how to survive by reducing our ecological footprint. During the outbreak it will be ill advised to venture out into the world. A community that can sustain itself without the need of a large footprint will be ideal, and is the goal of this project.

The *Proposal*

The Narrative

Our ecological footprint needs to be reduced in order to maintain a healthy flow of resources from the world, especially when we can no longer go out into the world as a safe means of obtaining said resources.

It is up to learned professionals in the areas of human study to be prepared for the possible outcomes of an outbreak, mass hysteria, lack of government control, widespread murder and chaos. How can preparations be made for this outcome? How can we prepare everyone?

Humanity's ecological footprint is important in this scenario because it will define the survival of a community. In Greene's *worldchanging* the ecological footprint is defined as the measurement of demand people have on nature, material, saftey, food, ect. (*Worldchanging: Bright Green,* 2011) What does this tell us about our survival if our footprint has suddenly been taken away from us? What if it becomes impossible to use the world anymore?

How can we take into account our lack of a footprint? There are steps that can be taken by architects to prepare for the outbreak in this sense. It is possible to design projects, even communities, where the footprint is minimal to begin with. How can they do this? What steps are to be taken? Can the ecological footprint of a community even reach zero?

It is these questions that drive the focus of this thesis. Can the ecological footprint be reduced to zero? Is it possible? Can we accomplish that feat before the outbreak forces it upon us when we are unprepared? This idea is important to me because an outbreak, described by Brooks (Zombie Survival Guide 2003), a destruction of the world in some manner is going to force this situation on humanity in the future anyway, zombies being one of the most culturaly accepted ways in this generation.

User/Client Description

The community shelter is to be a public facility, owned by the county of Sibley. In a case of a zombie outbreak, the government is going to be the foundation of organization and control. The chaos of the situation will be catastrophic and wild. The public residents will also take part in the survival of the community and everybody will, in part, become in control of the facility. The major fact to understand, should an outbreak occur, and this facility's use be maximized; is the people using the shelter will become one single community, one family. Race, ethnicity, gender, age, and knowledge would merge into a single entity. The community's survival and ability to sustain will be the only directive. This isn't about comfort, but survival.

Owner
- county of sibley
  - and all its residents

Users
- survivors of the outbreak
  - residents of sibley or nearby counties
    - anybody seeking refuge
- workers of the facility
  - maintenence workers
    - water facilties
    - construction workers
  - farmers of the rooftop farm
    - crops and livestock
  - doctors any medical care that may be needed
    - healthcare
    - welfare
  - goverment officials
    - courts
    - police
    - martial arts experts

Major Project **Elements**

If the community shelter is going to have the ability to sustain and protect survivors it needs to be able to house a community itself. The question is then, what does a community need? What does a community need in order to survive? There are three important necessities to surviving in any condition. Health, safety, and welfare. While the choices are debatable, these three, I believe, are the most important. Important, according to Brooks, in zombie-proof design as well. (Zombie Survival Guide 2003)

- Health
  - Farm
    - water collection
    - rooftop farming / herding
  - Fitness
    - swimming
    - track
    - martial arts, self defense
- Welfare
  - Space
    - lots of open space to suit any needs that arrise
  - Games
    - child growth development
  - Family
    - moral support and motivation
- Safety
  - Homes
    - a place to sleep safely
  - Bunker
    - what caused the outbreak?
  - Protection
    - zombie-proof designs approved by Brooks

Site Information

Minnesota is in the central United States, bordering canada. The climate and location are ideal for an emergency shelter from the outbreak for several reasons. The first is that the region is populous, but not too populous. People are everything when it comes to survival; too many and you won't be able to maintain control, too few and there is nobody to save. The second reason is the landscape, which is fertile, flat, and full of water. See Max Brook's survival guide for his exact parameters. A third reason is the climate of hot summers and cold winters. Zombies, according to Max Brooks, may be the living dead, but the living part of them is as vulnerable to the weather as we are. We have the upper hand, however, and can adapt to the situation in a dynamic environment.

Sibley county is about y0 miles southwest of Minneapolis, MN. As stated above, it is important to be near a large population, while not being engulfed by it. Sibley county is near the outskirts of the metro area, only a half an hour away from the main districts, like Eden Prairie or Bloomington.

The rural area where the site is located is about five miles away from Green Isle, MN in Sibley County. The population is low, roughly 700 people, but the town provides almost any basic need when it comes to survival, such as work shops, and food stores. other small towns surround the area as well, so while being in an isolated farmland area, the site is never terribly distant from people. That being said, once the location is known to people, it can be easily reached by way of highway 25. the highway stretches on in west and southeast directions. Communities and Sibley County can easily use the route to reach the destination of this community shelter without difficulties, and, as zombies don't read, putting up directions would never be an issue.

Figure 1. Map of site in MN

Area of Site

On the micro scale, the site is in the middle of farmland not far from the small town of Green Isle, MN. The exact site, in the very middle of the image taken from google maps on the right, is surrounded by farmland and groves of forest cover. The roads in the area are mainly country gravel roads, with the exception of one state highway 25. The highway moves throughout Sibley county to the west and southwest. Transportation, vehicle or otherwise, is very light in this area, which makes it a great sheltered space from the public, and only necessary traffic passes through the area.

The physical boundaries of the area are the separate farmland sections and the occasional grove of trees. The site itself is a patch of fertile grassland along with a small pond. There is a small slope rising from the east to the west on the site, creating a small environment with the feeling of being secluded from other aspects of the area.

The neighboring populations are only farms and homes. Very small populations in the area give it a sense of protection from the dangers of zombie penetration in highly densed areas in major cities. There is a small town to the west, Green Isle, that can provide for the site if anything is direly important to acquire. Any longer distance to travel is ill-advised, but the site is not out of reach of any locale.

Project **Emphasis**

The primary focus of this thesis will be to explore the qualities and properties of recuding, or minimizing the size, of our ecological footprint in our architectural designs. The means of accomplishing this task is understood by the zombie apocalypse. The ability to sustain is key in surving the zombie outbreak, and, when this eventuality is forced upon our humanity, it will be more important than ever to learn how to sustain ourselves from the zombies and ourselves.

Can zombie-proof design become a solution to sustainable factors?

Plan for **Proceeding**

Research Direction:

The ability to sustain has been debated and talked about for years in architecture. That same topic is being brought to light here again. The idea behind my theoretical/unifying idea is the driving force to my research. Discovering new ways to design sustainably, even under fantastic circumstances, are important to the development and growth of design in architecture. In this thesis I study that the fantastic force at play is the zombie outbreak onto our nation.

Design Methodology:

The research in this thesis will be analyzed through the mixed quantitative/qualitative approach. The ideas and case studies will be studied through and through, referencing each other to come up with a singular, or multiple areas of accomplishment. The thesis statement is the driving force of my motivation and the problem will be the zombie outbreak. The solution I have obtained is the ability to sustain in a shelter without the need to leave. A minimal ecological footprint.

Documentation:

It is not only important to come up with ultimate ideas, but to document every single fact or truth I discover. Ideas are just ideas until they can be told as a story. When ideas become more than just mental images, but visual images, physical images, they can teach so much more. Proper documentation is the key to discovery and with it any idea can be analyzed further.

Previous Studio **Experience**

Second year
- Fall 2008
  - Heather Fischer/Megan Duda
    - tea house
    - boat house
- Spring 2009
  - Mike Christenson
    - school of dance
    - form study

Third year
- Fall 2009
  - Paul Gleye
    - center for excellence
- Spring 2010
  - Ronald Ramsay
    - shaker barn school remodel
    - daniel h burnham library

Fourth year
- Fall 2010
  - Frank Kratky
    - soma highrise
- Spring 2011
  - Don Faulkner
    - northern pacific apartments
    - oil town urban design

Fifth year
- Fall 2011
  - Cindy Urness
    - mxc center of waterlife management

Program *Document*

Research Results and *Goals*

Results From TP/UI **Research**

The claim of the theoretical premise/unifying idea states that architects and anthropologists have the knowledge to determine how to reduce our ecological footprint on the world. The zombie outbreak will effectively cut our previous ways of obtaining our basic needs from the environment, and surviving the outbreak is paramount to all else. The following research has been compiled about how and why we can and should accomplish these goals, survive this apocalypse, and live on to tell our stories to the world.

Architects and anthropologists have a similar field of study, whereas, they both must understand the needs of the common individual and/or the particular individual. When looking at the needs of a person architects should, in my opinion, focus in on three main factors.

Health, Safety, and Welfare

These three factors should consume the way of an architect's thinking. Enough that if they were left out in designs, the design would be a flaw, and, therefore, false. These factors are ever more strengthened in this scenario because they are all directly related to surviving not only in a structure, but also in the evil world that will eventually, and has already, overtaken us. Over the next few pages I will discuss how exactly each of these three paths directly correlate with this thesis, and the proper means I believe to go about distributing their importance in our current state in the zombie apocalypse based on Brook's *Zombie Survival Guide*.

Health:

The first factor listed is health. Besides the obvious fact that staying healthy is surviving, it is important to strive to become in the best health possible. The architect or designer must encourage physical activity and awareness in every individual. When all else fails, the human body becomes the ultimate machine in survival, and the human body is going to need to be able to rely on itself at any given moment.

The community shelter must be able to provide the means of gaining strength and increasing stamina for every person. Whether this means recreational activities or practical activities in the shelter, if people are not staying active they might as well consider themselves zombies. Several solutions will present themselves in the shelter, such as an indoor running track, a weight facility, an energy room of sorts that like Brooks (Zombie Survival Guide 2003) has suggested has chargeable generators powered by physical effort, ect. There are infinite ways a person can better him or herself and it is the shelters purpose to assist those people in any way it can.

Safety:

The second factor is safety and as important, or more so, than the other factors. Architects and designers must only use design strategies that can protect a person from the living dead. In a later section of this program, I will provide a document that shares exactly what a zombie is, and how to protect humanity from them.

The strategies to be discussed are directly applied to the structural design of the community shelter and will provide ultimate safety and protection from any class of outbreak.

To summarize briefly, Brook's (Zombie Survival Guide 2003) illustrates the different class categories of outbreaks. There are essentially four classes. Class 1 is a small outbreak of a handful of encounters. Class 2 is a bit more serious, spanning up to a hundred miles in a rural location. Class 3 is a most deadly scenario, where thousands upon thousands of the living dead swarm around an area of a couple hundred miles - whole states would be consumed and quarantined; and a Class 4 is the ultimate end of the world, in which the zombie population vastly exceeds the human population. Humanity would no longer be the dominant life form on the planet, and everywhere one would turn would be danger.

The safety factor, in regards to the class system, will have to be designed to prepare us for a class 3 outbreak or worse. Quickly established and strongly reinforced structure will be needed to resist the pounding waves of the undead. If a structure would not be able to protect people from a class 3 or 4 outbreak, Then it becomes a hindrance and a danger for people looking for safety, and ultimately useless for the ability to sustain.

Welfare:

So you one is physically fit, and in a safe secure environment. What about one's mentality? One will have to assume that authority will be spread thin, and going out looking for it wouldn't be the best of ideas. Humanity will effectively disappear and our communities will turn medieval in nature. A leader will be needed, a system of living will be needed, a means of staying sane will be needed. One's psychology will be at risk, along with the other factors of physical health and safety. It might even come down to other citizens being the enemy, rather than the undead.

The most important thing to never forget is that it is impossible to survive alone. People will need each other in every way, so working together and keeping the group alive is the top priority. Essentially, the community shelter is designed to prevent this potential loss of humanity and become a home for those who will need it. The shelter must be able to provide the health and safety listed above, but also the health and safety of people's mentality. Each shelter in each district would be in charge of an official or group of officials ready to assume command, and the shelters will be fortified much like a fortress of medieval ages resisting sieges of neighboring enemies. Food will be grown, water will be collected, and energy will be conserved. It is important not to panic, but to seek out the nearest community shelter, once the alarm is sounded. This isn't a storm that will blow over quickly; it's an infection that will last several months, years even, Depending on the class of outbreak.

The action of the theoretical premise is to reduce our ecological footprint. During an outbreak, venturing out into the world is a risk not always worth taking, actually, not worth taking at all. If one ventures into the unknown when the outbreak is in your community, the chance of survival is near zero, no matter how accomplished or talented that person is.

However, with proper sustainable design strategies it is possible to create a shelter where someone would never have to leave. Food, water, and shelter, all can be provided in the same place for several years. Like I stated before, surviving a siege is what will be happening when the outbreak arrives at a community.

In the medieval times of castles and kings, warring nations would lay sieges to enemy territories in hope to overthrow them. But if the castle or keep couldnt be penetrated, the seigers couldn’t accomplish their goals. The attackers would starve and have to give up, and the castle or keep would be safe. The zombies may be in threatening numbers and almost impossible to get rid of, but they do not have the means to survive as humans do.

It is that exact idea, surviving a siege, that is being considered with this zombie outbreak. A community will be surrounded by the enemy. To leave the castle or keep is to be slaughtered. But, the question is raised, how did the habitants survive enclosed in their castles? Castles and keeps were fortresses, with farms and homes on the interior for every soul that dwelled within.

Of course, they did not have the technology back then that one has today; one can accomplish the same results in a smaller, more effective way. Most of these strategies are covered in the case study research, but a select few I will name right here. Technologies provide sewers and water collection. Technologies provide green rooves and solar power. Technologies provide better farming and food conservation. By using even basic methods of survival from history, one can begin to understand what needs to be done to match their ultimate way of survival.

"The Global Footprint Network defines an ecological footprint as the measurement of the biological capacity of the planet that is required by routine human activity." (*Worldchanging: Bright Green* 2011). Basically, what people do every day defines the footprint in the dirt. Say one makes hamburgers for dinner. Where did they get the hamburger? From the grocery store ten miles from one's house? Where did the grocery store get the hamburger? From a local farm 20 miles away? From a processing plant 100 miles away? How long does it take to farm cattle? How many years before the cow can be harvested? Ok, so understanding where the hamburger came from, and what it took to create it, take into account the bread one uses. The condiments, and even the drinks or side dishes. If one looks at the footprint, one must look how far back his or her needs have traveled for them.

That, in a sense, is the ecological footprint. The larger it is, the more direct demand it has on the environment. It gets far more complicated when one looks at the use of a vehicle. Does it not?

The only way to reduce the footprint to “zero” would be to live in a natural forest, in a house made of fallen branches, and drinking river water. However, one can no longer go back to that time, unless the population is completely decimated. However, with new technology, it’s possible to get to zero, or even a negative number. Reaching a negative number would mean giving back more to the world than one has taken from it, for example, a passive energy system that puts power back onto a grid. Or in a more simple sense, a garden that can produce infinite food. It is not an easy task and has become one of the most important goals in architecture design today. Eventually it will probably be law for a structure to produce its own energy, rather than a grid. These strategies will not only save money but also our lives on this planet in the long run.

These strategies become ever more important when the zombies attack. It is most likely that the grid will shut down when there is nobody left to maintain control of it. Cities and towns will be black at night, and energy will have to be made of blood and sweat. Max Brook’s *Zombie Survival Guide* (2003) covers some strategies of producing energy in a zombie outbreak, generators with bicycles for example. Not only will it provide exercise, but also light for those who need to get work done, or energy for a powered bridge or gate. The means of reaching net zero energy or better will be paramount to surviving the outbreak. Resources will be difficult to obtain. Leaving the safety of our home will be deadly, not only because of the zombies, but also because of looters and criminals taking what they want as their means of survival.

In conclusion, it is ultimately important to understand that the danger is real, and it is almost here (If not, already). Architects and designers have been commissioned to design these shelters in each participating county in every state. Learn where a shelter is being constructed, and make sure it will be able to provide support if needed. Surviving as a large number of people will take the effort of every single individual.

Do not forget, the shelters are obliged to provide healthy environments to keep one physically well during a siege, as well as, safe walls that with help citizens to sleep at night. And finally, a place to put one's mind at ease, as well as work it to provide support for others. The shelter will be a living building and not just a building to live in. While there are building overseers and supervisors, the shelters are designed to allow citizens to run and power them because a group effort keeps the group alive. Group cooperation cannot be stressed enough.

The basic goals and purpose of the community shelter have more or less been covered, but each one will be unique to the region which it was contracted and will develop according to the citizenry in each of their own locations. This thesis covers the rural area of Sibley County in central Minnesota, and the people living there will understand how to maintain their shelter along with their lives.

TP/UI Research Results **Summary**

As a recap to what was covered, I will restate the theoretical premise/unifying idea:

"Our ecological footprint needs to be reduced in order to maintain a healthy flow of resources from the world, especially when we can no longer go out into the world as a safe means of obtaining said resources."

The research results covered the main aspects of the design intent through the theoretical premise/unifying idea. In order to survive the zombie apocalypse, it will important, direly so, to apply the premise to designs concerning health, safety, and welfare. If a person's basic needs cannot be met during the outbreak, he or she will simply not be able to function or even grow. How are a person's needs applied to this idea?

The goal is to reduce our footprint on the world. In a sense, the zombie apocalypse almost forces humanity to do this. People may no longer go as far and wide as they previously could to obtain even the simplest components of their lifestyle. The design, therefore, must provide all of these needs in a closed, safe environment so that every person has what he or she needs in order to survive the struggle.

Health needs are met by the use of fitness facilities and activities that keep the citizens in constant movement and good physical shape. The shelter must also encourage the citizens to maintain a steady flow of workouts. the best thing to do if one encounters a zombie is to run, and one cannot run for long if one is out of shape.

Safety needs are provided by the zombie proof designs that each shelter is based on. These shelters are going to need to be assembled quickly to be ready before the outbreak reaches all locations, and only materials from the surrounding area may be used if time is of the essence. Although it does not take much to stop a group of zombies, stopping a horde will require extreme care.

Finally, welfare is at risk because panic will be bursting from every seam of every person's being. A zombie is unnatural, a monster, and the constant moaning of the beasts can quite literally make one go insane. The shelter will provide means to keep the zombies out of one's mind and ears while he or she waits for them to fade away.

After these basic needs met, it is up to the citizens of each district to maintain the means of meeting the needs. Food, water, and energy are going to be the most difficult to maintain, but with efficient design strategies, the community shelter will provide the means to adequately keep everything polished and running. Along with many fail-safes that will need to be administered, it will be possible to stay in a well-stocked community shelter for a couple of years. However, such a length of stay will only be necessary in a class 4 outbreak.

In the end, it will be paramount for the community in each community shelter to work together in order to survive the hazardous quality of being quarantined. The very fabric of a community depends on how well everyone works together, and how much effort everyone puts into maintaining the safety of others. If the health, safety, and welfare of every individual is carefully surveyed and kept in line, the community will be able to use the shelter effectively and indefinitely.

Results From Typological **Research**

Case Studies:

1) Safe house
   by KWK Promes
   near Warsaw, Poland
   completed 2009

2) Villa hush hush
   by Marks Barfield Architects
   proposed

3) Nanjing sifang art museum
   by Steven Holl Architects
   Nanjing, China
   will be completed 2012

Case Study 1: Safe House

The first case study of this outbreak file is that of kwk promes' safe house. The safe house is a residential unit designed by architect robert konieczny, near Warsaw, Poland. The site of the private property is about 2500m², and the usable floor area of the cube is roughly 556m². What makes this case study peculiar is that it is designed as a literal safe house for protection. Located in an old village of cubic homes and barns, it seems to fit into the community, and although it can be considered a luxury home, it can contract and encase itself into a solid impenetrable concrete cube.

The main feature of this design, in my opinion, is the moveable sliding components that distinguish how opened or closed the house is to be. The main building is concrete, while the large moveable windows and sliding doors are light steel trusses filled with mineral wood.

When the house is closed, it is completely insulated but void of natural light. when the house is open, entire glass walls are open to the sunlight and the surrounding environment, making it almost as free and open as it was encased when closed.

This case is separate but closely related to the other case studies, due to the characteristics of its function. This case has a barrier around the building to block surrounding hordes, while the others do not. This building can also close itself off to a group that penetrates said barrier, while the others cannot. However, they all share, in some way, a means to be out of reach of zombie hands, if only temporarily.

The safe house actually responds to its site rather well. As stated before, it is in a small village outside of warsaw, and the surrounding village is old and full of cubic homes and barns. While the design may feel new or modern, it fits rather snugly into the community. It is, however, the strangest building one will find in the area.

From my perspective, looking at this from a class 3 outbreak situation, I feel this building would survive quite a deal longer than the other two case studies. If the barrier were constantly closed, a group of zombies would not knock the wall down. If anything, they will pile on each other until a few get over the wall. At that point, the property of the owner would be dangerous and the house would immediately have to be closed up. With the solid cube entirely closed, I do not see how a single zombie would be able to work his or her way into the interior of the house.

That being said, the next page illustrates the building diagrams and functions relating to the protection it offers. The images will be labelled with a short description of the ideas and possibilities of attributes concerning:

structure
natural lighting
massing
elevation
circulation of space
geometry
hierarchy of elements

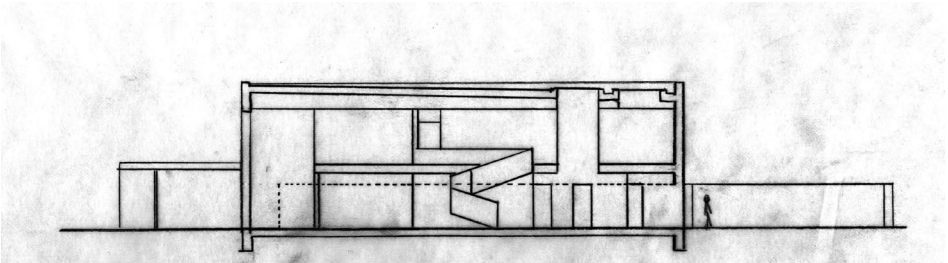


Figure 2: Structure display

The section elevation, above, illustrates the style of the structure, with two levels encased in a concrete cube. The elevation illustration, below, demonstrates the geometry, the hierarchy, and the elevation of the cube. The top drawing shows the closed state, while the bottom shows the open state of the southern face.

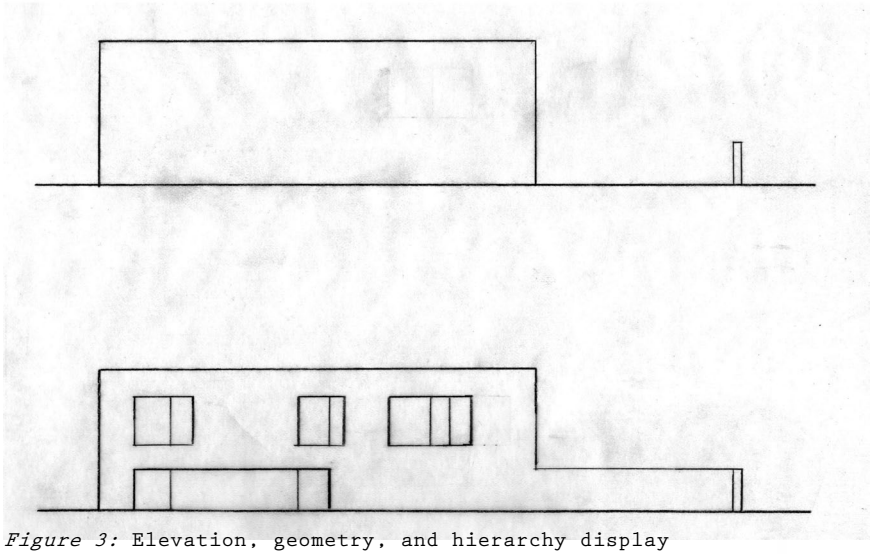


Figure 3: Elevation, geometry, and hierarchy display

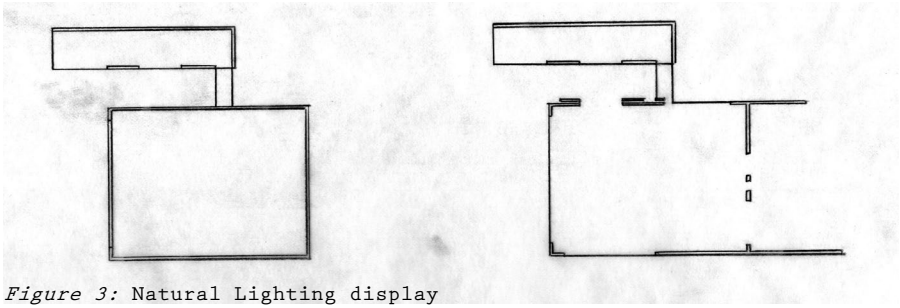


Figure 3: Natural Lighting display

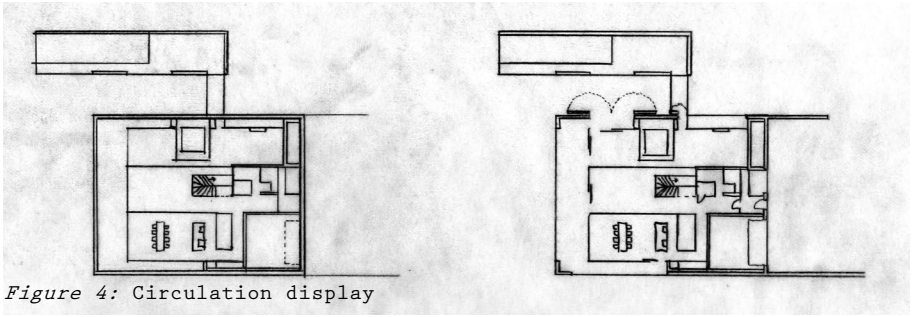


Figure 4: Circulation display

The top-most drawing shows where the natural light may enter. When closed, from nowhere, When open, on every side. The middle drawing shows the interior layout of the house and possible circulation. The bottom-most drawing displays the massing of the side and the cube itself on side. When closed, the entire property is in a safe zone.

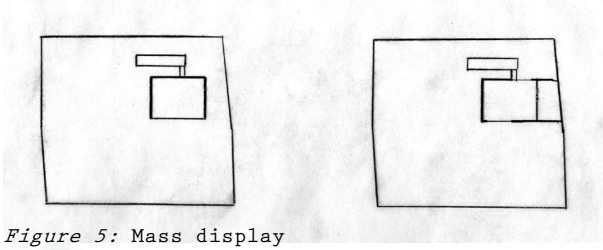


Figure 5: Mass display

In conclusion, the safe house is a proper demonstration of the theoretical premise and unifying idea of this outbreak file. The structure of the building is simple and maximizes space and protection because it is a simple block on the earth. Heating strategies and cooling strategies can be more easily managed in a space like this, and nearly every corner of the building can be seen and observed from anywhere inside the main house.

The use of mechanics to open and close the house will become a problem if the power grid is knocked out during an invasion and will need to be powered from some other means. The idea of opening and closing the house to outsiders is a key element that makes this case worthy of recognition for this thesis. A design can be beautiful and functional; It can enlighten and protect in a dire situation.

The safe house is, however, far too small to be considered a safe place for a community. In the case where one can hold out in his or her own home for a long period of time, it could be a perfect sanctuary in holding out from the zombie hordes. This project only strengthens the core fabrics of this thesis in terms of sustainable design. The footprint of the owner will be minimum if he or she considers it.

Case Study 2: Villa Hush **Hush**

The second case study is villa hush hush, A residential unit designed by marks barfield architects. While the design is still just a proposal, there does not seem to be a specific site for the project. It is designed to be situated in sensitive sites, which makes the project very adaptable and available to any condition.

The main distinguishing characteristic of this building unit is that it can be elevated off the ground to quite a height. There are four different rectangles to the whole unit, and each connects to the ground with a cylinder. The shape is very simple geometrically, but interesting in its function, especially when i relate it to the zombie crisis.

This case is more closely related to the nanjing sifang museum than the safe house. Villa hush hush and the museum are elevated structures that provide distance from the ground, while the safe house is firmly planted on soil. However, the villa is the only case that can raise and lower its platforms to fulfill needs of views and privacy, where the other two cases cannot.

The site is none specific. There does not seem to be a set location for the design, and it is proposed to fit into any setting or any given location. I think the adaptability of this fact makes the building an interesting feature to behold. If I state that this villa is the perfect zombie proof house, it will want to be copied everywhere to give everyone maximum protection. There are elements that make this case an interesting one when considering the needs of a protective system.

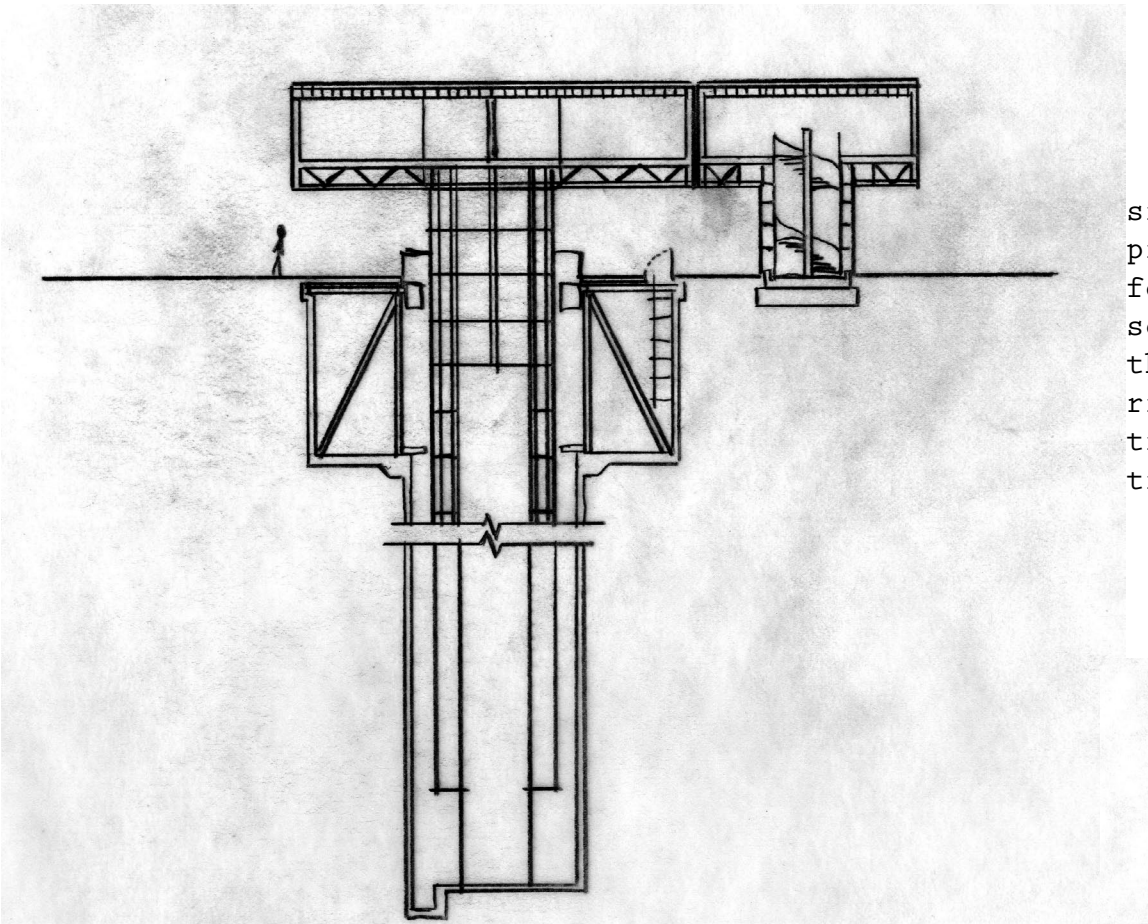


Figure 6: Structure display

The image to the left shows the basic structure of the villa along with the piston mechanism for raising the platforms. The bottom, left image displays a section that shows how the sides allow the natural light to flow into the interior. The bottom image shows the elevation in both lowered and raised positions.

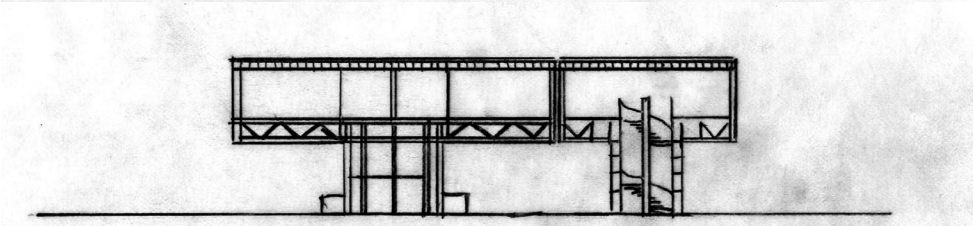


Figure 7: Natural Lighting display

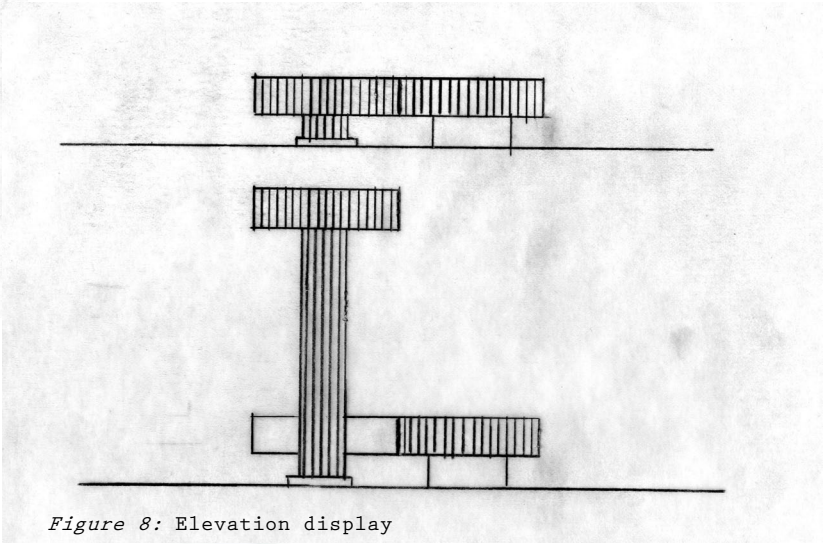


Figure 8: Elevation display

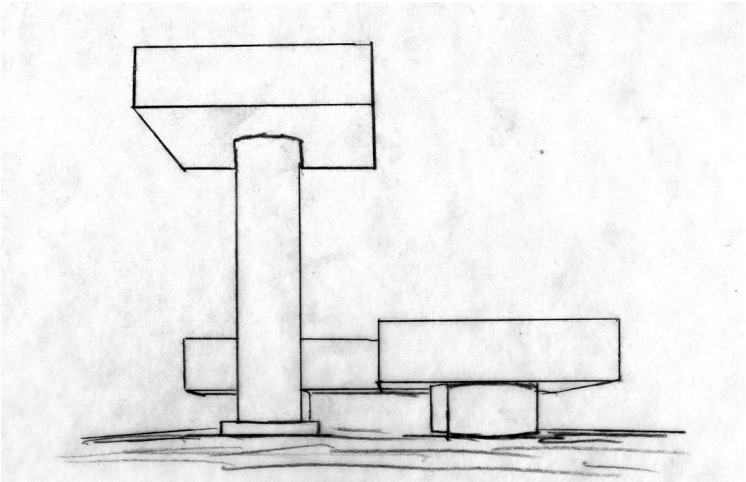


Figure 9: Geometry and hierarchy display

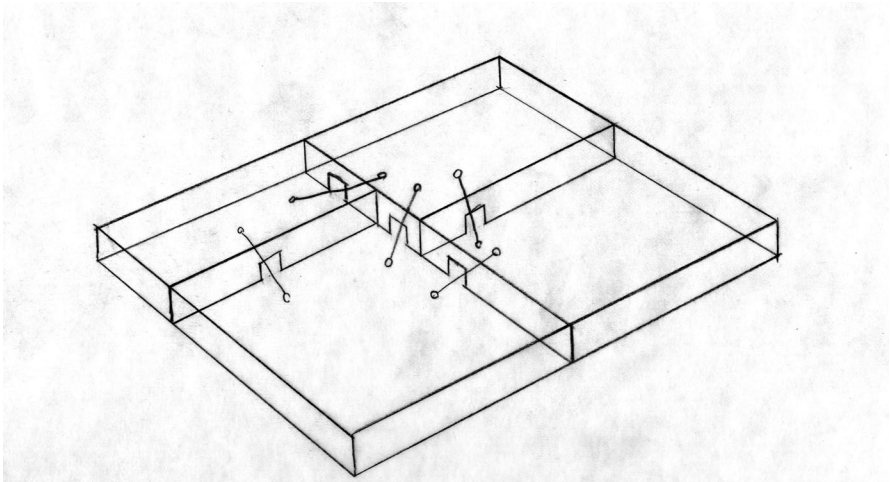


Figure 11: Circulation display

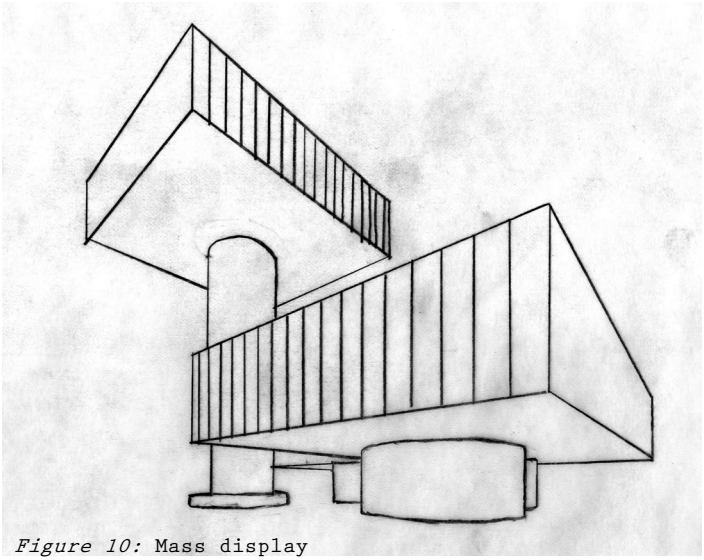


Figure 10: Mass display

The top, left image shows the basic geometry of the rectangular shaped villa, along with the hierarchy of the shapes involved. The top image shows the possible circulation of the four spaces, and how each can be connected. While the platforms are raised, however, it becomes impossible to navigate between each room. The image to the left shows a perspective sketch displaying the shapes and mass of the structure, and how it looks from standing at the base of the villa.

Villa hush hush has an interesting paradox when it comes to this thesis. While its design and function are interesting to the cause, it seems to be, if left alone, not a very good place to hold up during an invasion. The major downside is the fact that once one is up in the air, there is nothing one can do to escape the zombies, except wait until they decompose fully. The glass walls will not help, because zombies have keen eyesight, and, once they see you, they will not stop. This case earns its right as a case study because of its unique ideas of raising itself above ground and providing a long range view of a lookout.

The theoretical premise/unifying idea is weak in this case, as the power source of the building becomes inaccessible once the building is in the air. If the grid shuts down while one is up there, one would be stuck. The idea of escaping into the air is the key element of this project to provide maximum shelter.

Case Study 3: Nanjing Sifang Art Museum

The third and final case study is the nanjing sifang art museum. It is a museum of art and architecture located in nanjing, china. The size of the museum is about 30,000ft^2, and it has complex galleries, a tea room, a bookstore, and a small residence.

The most interesting feature of the building is the raised gallery platform. It is supported above the ground at strange angles and seems almost lopsided. It is a beautiful structure that draws the eye and does not let go of one's gaze. The raised platform has no windows, but instead a thin layer of materials that lets the natural light bleed through to illuminate the space.

The design of this building has nothing to do with protection, like the other two. But it, almost accidentally, provides a unique sense of privacy floating in the air like it does. in that aspect it relates to the villa. However, the majority of the building is located on the ground, separate from the raised platform.

Considering the site, it environmentally fits into the landscape securely and provides many breathtaking views to the surrounding landscape of china.

Looking at this structure from a safety standpoint, once one knocks down the stairs leading up to the upper gallery, it will be impossible for a zombie to reach people. It seems through these studies that height provides safety more so than just barriers, but does not take into account escape, unless one is being rescued.

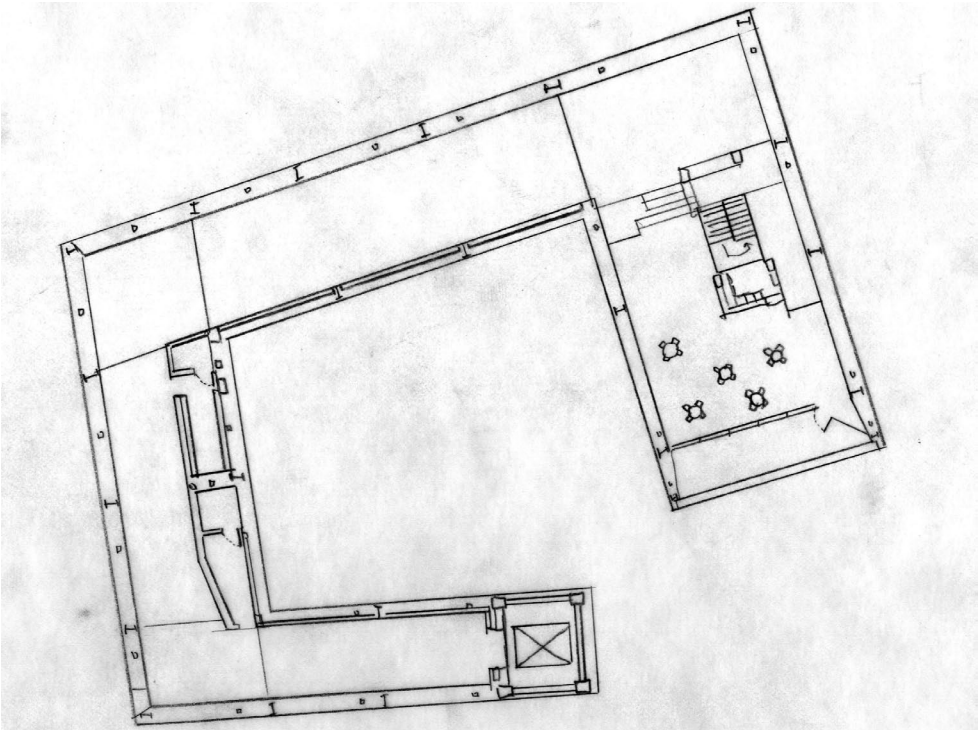


Figure 12: Circulation display

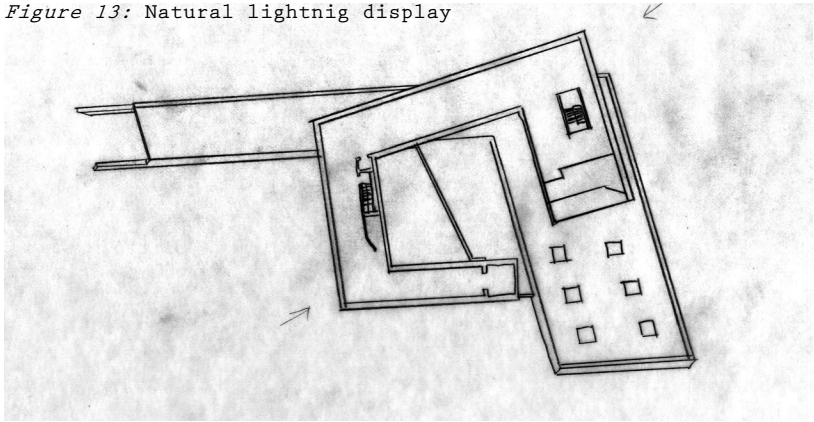


Figure 13: Natural lightnig display

The drawing above shows the circulation of the upper gallery space with the gallery and the tea room. The drawing to the upper right shows the upper layer and the skylights for the building below. The image to the right shows the shape and mass of the entire building, taking into account the angular twisting of the gallery above.

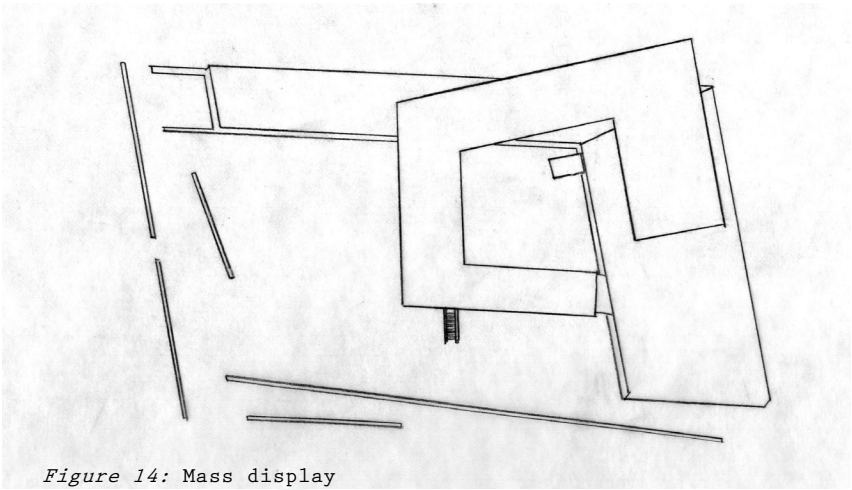


Figure 14: Mass display

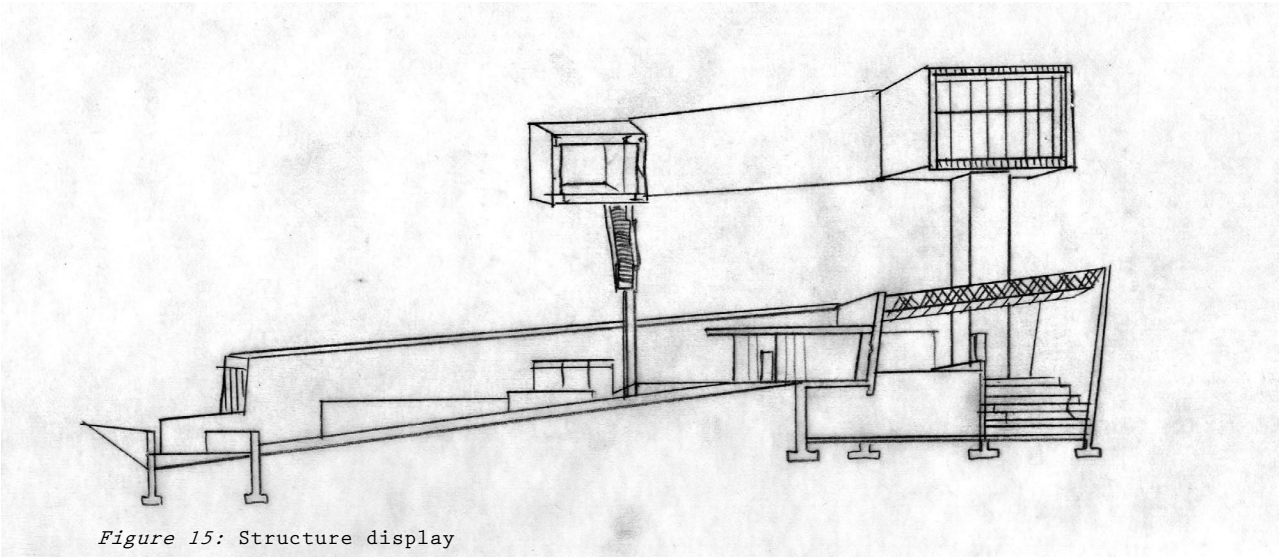


Figure 15: Structure display

The larger drawing on the left shows a section to give an idea of the structure and how the platform is raised. The image to the bottom, left shows a basic elevation. The image on the bottom shows a perspective of the upper gallery and how its geometry establishes itself as the most important feature of the complex.

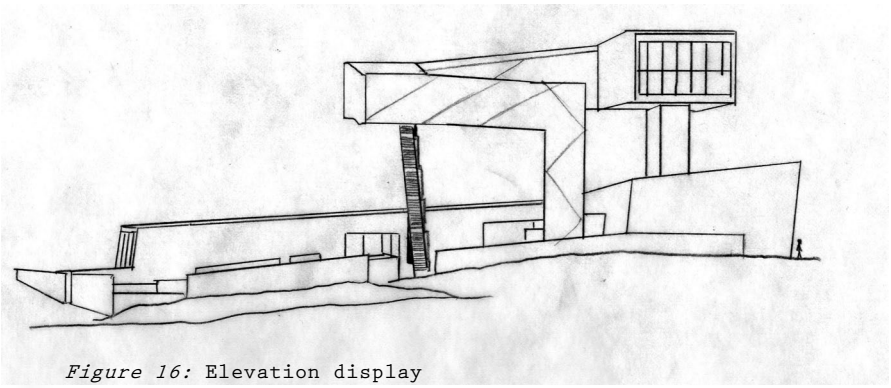


Figure 16: Elevation display

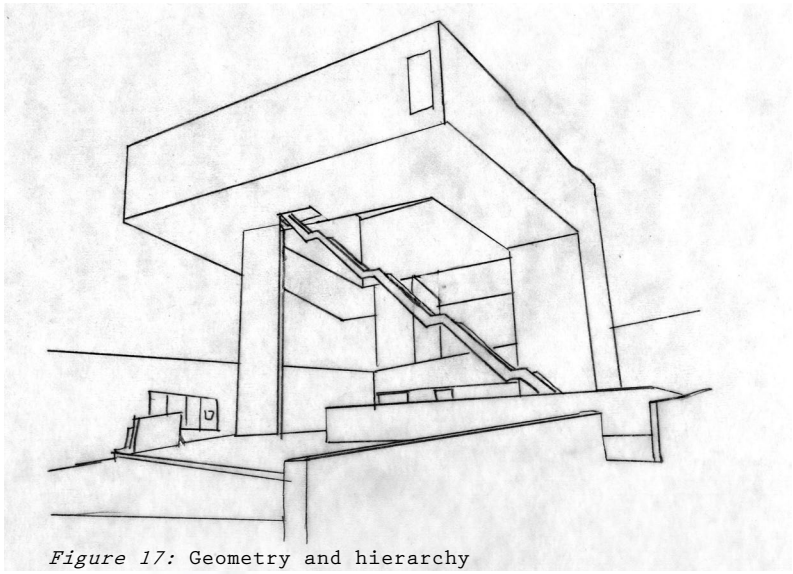
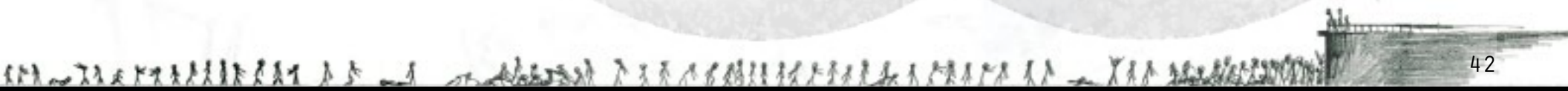


Figure 17: Geometry and hierarchy

The nanjing sifang museum was not meant to be designed as a protective place, but, as stated earlier, it accidentally exceeded expectations. With sustainable design in lighting and movement strategies it makes itself a very strong project with regard to my theoretical premise/unifying idea. All of the building is accessible by stairs and can be reached in any emergency. The size of the building itself allows for a large number of people to hold up. In specifics to the lighting of the upper gallery, the small number of windows is great to avoid being seen.

This project does not change my views on my theoretical premise/unifying idea at all. It has several major elements of views, protection, and accessibility. It is a strong project that heavily reinforces the possibilities to live in a comfortable space while under pressure.



Typological Summary

This section summarizes the ideas and functions of the case studies visited. The three cases were: 1) the safe house, 2) villa hush hush, and 3) the nanjing sifang art museum. All three have characteristics supported with the theoretical premise/unifying idea, and have established their features, whether they would be beneficial to surviving a zombie outbreak or not.

The common characteristics of each case study not only relate them to each other, but also distinguish strengths and weaknesses in part. The first common attribute all the designs share is that in the most secluded part of the building, one would, essentially, be safe from a horde of zombies. The amount of time one could survive in that secluded space varies, but for a time, a person has safety.

Villa hush hush and the nanjing museum have an element that the safe house does not, and that is the benefit of a raised platform. The safe house has a second floor, but not a separate zone completely out of reach. Villa hush hush can raise itself off the ground and into the sky, while the museum is already floating.

The safe house and the villa are both residential units while the museum is a public museum. In this respect, the museum is a much more advisable location to set up and hold out, because a house is small and more difficult to accommodate a community.

The main difference between site locations in the case studies is that the safe house is in a village, and the sifang museum is in the wilderness. The villa has no set site and cannot relate to the other cases this way.

When relating site to the unifying idea it is important to understand that seclusion can be your one's friend, and worst enemy. It is good to be in the middle of town, so one has all needed resources close at hand during an outbreak, but being in town means a higher population of people. A higher population of people poses a higher risk of infection. Complete isolation would benefit from the lack of people, and overall safety is increased, but then one has little access to many resources. The best idea would be to be close to a town, but firmly separated from it.

The functional relationship between the safe house and the villa is very close. Both cases use power to alter the building to provide more or less protection. The safe house opens up. The villa raises up. If that power is not privately generated, it is all together possible that one will not be able to use it when needed. Spatially, the museum has the most adaptability to larger crowds, while the safe house and the villa could only accommodate a small group or family.

These three case studies show strengths and weaknesses in potential to provide health, safety, and welfare to the public. All of the elements combined from these cases are going to influence and have influenced the design of this thesis project.

There were also two extra case studies that were not as involved as the other three. They were the Shime Coal mine structure in Japan, and the Annie Pfeiffer Chapel in Florida designed by Frank Lloyd Wright. Both structures represented a major influence on my design, but it was only intuitional. None of my influences were seriously documented or measures. Just based off how I felt about them as representitives of a zombie proof structure. The next few paragraphs will provide a short description of them both, nothing more.

The Shime coal mine is a large concrete structure, as you can see the image pulled from google on the right, and it towers over the landscape like a high rise. It is an old abandoned shaft that is elevated so high that zombies would not be able to reach the seeming “potential living quarters” at the top of the structure. However, it is not an ideal project because of its openness at the base, and its proximity to the city. I was quite fond of the idea of this tower though, and it influenced the ideas of closing the bottom of my design.

Frank Lloyd Wright’s Annie Pfeiffer Chapel was designed as part of his campus master plan in Florida. With the quote “Out of the ground, into the air,” literally coming to life in this structure, it became plain and obvious that an elevated structure is the ultimate means of setting up a base program when it comes to zombie proof design. Why build on the ground when you can be elevated and out of reach? I strongly urge architects in the future to grasp the concept that just because a structure must be anchored to the ground, doesn’t mean it has to sit on it.

Historical Context

When we look into our past concerning zombie outbreaks and infestations, it is difficult to pluck them out specifically. Historical records have recorded said events, but not particularly as zombie attacks. As Max Brooks describes in his Survival Guide (2003), they have been documented as brutal murders, cannibalistic acts of aggression, or religious fervor. However, if we look back and take special interest in the specifics of each occurrence, we can more fully understand what exactly we are looking at. The only saving grace of our current era is that we can now recognize fully what a zombie is and how they attack, especially with our current culture accepting the notion of zombies more and more.

This history report will be divided in two main sections. the first focuses on similar architecture projects concerning the ecological footprint and protective structures relating to zombie-proof design. The second will be a short history on Brooks's (Zombie Survival Guide 2003) documentation and records of zombie outbreaks in the past, as well as a few interviews that I conducted personally with individuals who encountered the monsters first hand.

Project **History**

The subject of the ecological footprint is very broad. The ecological footprint study is essentially the core study of what is called green design or sustainable architecture. There are countless definitions and perceptions about what green or sustainable design is, but the one common conception is that architects strive to build to the maximum while enforcing the minimum on the environment. Of course, that is subject to argument, but it is my understanding.

The ecological footprint is our way of life in direct relationship to the planet and its resources. There are many examples of protective design in the past that were more or less focus only on protection rather than being “green.” The most protective kind of structure from the past would be the castle. Ancient and almost mythological to us in this day and age, the castle was the ultimate fortress to protect a ruler of the land. Whether it was europe, china, or even central america, castle structures have shown us how to provide health, safety, and welfare to its inhabitants, and accidentally, being a little green in the process.

An online journal (Castle Defense, Castle Attack, Defending Castles 2011) provides accurate information on how castle warfare proceeded and gives ample demonstration to how the strategies worked or did not work. Two main factors that were always paramount when building ancient medieval castles were where it was located and what shape it took, similar to today where we consider site and form. of course, instead of green design they were focussed on protection. The site would usually be on top of a hill, or on a cliff on the coast to prevent easy access by invaders or easy escape for those dwelling within.

The shape of a castle was usually attempted to be circular in form to prevent easy attack points for invaders and prevent flat surface areas for battering rams to knock down the huge stone walls. The weakest point in the castle perimeter was the main entrance gate. Of course, this is why the drawbridge was invented to allow entrance only when those in the castle wanted. Looking back at the case studies one can attribute this same style to the movable walls located on the north and south side of the safe house.

The idea of castles was not just to provide protection for a monarch or ruler. Eventually, the concept consumed whole cities and entire populations would be surrounded by castle walls and protected. One example being the city of Carcassonne, France. The city protected its entire border instead of just the castle to prevent the costs of building and rebuilding itself once war hit the nation.

The question is, how were these castles sustainable? What green strategies did builders employ in the construction? For one, their site selection was sustainable because they chose sites that would benefit their community to the fullest. Some castles had to be in a key strategic standpoint to lure warring nations, in order to demolish them. The materials of the early castles were stone and marble. The materials wouldn't be shipped across the world (in most cases). The materials were usually local and in today's sense, that is a strategy that we even have trouble with. Castle walls were thick to keep in heat and most windows were even on the south side. Fire was a major fear in warfare, and fire prevention strategies, as simple as using dampened wood and ground, gave the castle some protection.

Besides ancient castles, numerous pockets of defensible community projects have been established. One architect in particular, Oscar Newman, started the “Defensible Space Theory” in the early 1970s and wrote his first book on the subject *Defensible Space* (1972). In his later book *Design Guidelines for Creating Defensible Space* he defined the term defensible space as “a term used to describe a residential environment whose physical characteristics - building layout and site plan - function to allow inhabitants themselves to become key agents in securing their safety.” Basically, Newman goes into more depth, giving data that a criminal will feel less obliged to commit a crime in an environment controlled by active citizens who assume a small portion of ownership in a given location. Environmental design can directly enforce those thoughts upon a community and can help establish a connectedness in any community environment.

The elements that make up the theory are: territoriality, the idea that ones home is sacred; natural surveillance, an area’s physical attributes along with the inhabitants awareness of it; image, the physical design to ensure security; and, Milieu, the proximity of the location to other secure locations. (Defensible Space 1972)

Newman’s theory was largely popular in city design until the 1980s; although, through a few adaptations to the theory in 1990s his theories are still widely used today. The idea of defensible space is largely aimed at crime in certain communities. Its ideas and concepts are also relevant to a community surrounded by a threat of hostile zombies. Through analysis and understanding, these ideas will be implemented in the design of the community shelter for this thesis.

Brooks's Historic Findings:

To understand how the outbreak has affected our culture, we must understand the events of the past, and how they evolved with our responses toward them. This next section will be dedicated to the findings of Brooks (Zombie Survival Guide 2003) regarding arguable encounters and my own interviews with citizens and their close calls. Details in this program are summarized from the guide (2003).

3000 b.c. Hieraconpolis, Egypt.

In 1892 a british dig excavated an ancient tomb of an anonymous person. the body was found outside the tomb huddled in a corner. There were thousands of scratch marks all over the interior of the tomb that archaeologists determined happened over the course of several years. The corpse itself had several bite marks and through an autopsy revealed that they were human. The autopsy also revealed signs of the virus Solanum (Brooks attributes to the zombie virus). It is debated now if this is why ancient egyptians were first prompted to remove the brains of the dead before they were buried. (p. 183)

329 b.c. Afghanistan.

An unnamed macedonian column built by Alexander the Great was visited many times by soviet special forces. A few miles from the monument they discovered what was believed to be an ancient hellenic army barracks. Among the artifacts there was a small vase with strange inlaid pictures. The images were as follows: 1) One man biting another; 2) the victim on his deathbed; 3) the victim rising from his death bed; and 4) the victim biting another man. The nature of the vase suggests it was related to Alexander or one of his tribes. (p. 185)

140-41 a.d. Thamugadi, Numidia (Algeria).

There was a record of six small outbreaks recorded by Lucius Valerius Strabo, Roman governor of the province. the outbreaks were easily crushed by two cohorts. The total number of infected killed: 134 total roman casualties: 5. Other than the official report, there was a journal of the event stating how Romans rescued a small family from their house that was surrounded by the monsters. When they were rescued the author described them as completely insane and judged the constant wail of the monsters to be a most horrendous torture. This is the first known record of the psychological damage of a zombie attack. (p.188)

1281 a.d. China. (p.193)

The venetian explorer, Marco Polo, wrote in his journal that during a visit to Xanadu, Kublai Khan revealed to him a severed head in a jar of clear alcoholic fluid. The head seemed to watch him wherever he went in the room, and when he would reach out to it, the head would viciously snap at his fingers. the khan replied that his grandfather genghis took it after his conquest in the west. Also that one of his own servants made the mistake of being bitten by the head and soon died. After he was declared dead, however, he proceeded to attack several of Kublai Khan's other servents.

1807 a.d. Paris, France. (p.202)

A patient was admitted to an insane asylum being declared "feral". the patient bit an older patient, and the older fellow was sent to a private room to heal with 50 others. What followed several days later was an orgy of violence. All that remained were five decaying zombies. Napoleon ordered the hospital closed and "purified."

1942 a.d. Central Pacific. (p.219)

During Japan's initial advance in WWII, a group of imperial marines were sent to garrison atuk, and immediately on their arrival were attacked by ravenous madmen. Casualties were high and the platoon was forced to retreat to a fortified mountain top. the madmen were unable to scale the mountain, but they surrounded the area preventing any kind of escape. A sniper, Ashi Nakamura, discovered that they could kill the madmen with a clean shot to the head. The platoon made their way down the mountain, cleaning the area of every madman they came across. Eye witnesses claim that the platoon commander decapitated eleven of the attackers with nothing but his katana. Intercepting intelligence caught a message from central command to send men to capture, not kill, any remaining zombies of the area. Reports state that four were gagged and hauled off by submarine, but reports from the group could not be verified because any sharing of information about the experience would be punished by death.

1993 a.d. downtown Los Angeles, California. (p.236)

An investigation is still underway concerning an alleged gang war in downtown Los Angeles. A group that first detected the outbreak, known as venice boardwalk red, described that they were in the area to avenge the death of a fellow gang member when they were surrounded by a mass of 40 monsters. With their transport wrecked, they found shelter in a nearby school building, De Soto junior high. While breaking into the school, they tripped an alarm, alerting every zombie in the area to their location. In desperation they called other rival gang members to help destroy the monsters, and, as suspicious as it sounds, the rival gang members came to their aid. Unfortunately the aid

arrived at the same time as the l.a.p.d. the report was labelled as a “shoot-out between local gangs.” The reds and the peros (the other gang to come to their aid) try desperately to tell their story to anyone who listen, but people dismiss the claims assuming the gang members were hallucinating under drugs. The case would have been forgotten if not for one, nameless detective who found the story strange. Instead of reporting to his/her superiors, fearing ridicule, he reported immediately to zombie expert Max Brooks.

My interviews with witnesses and victims

2011, november - Shelby Lano, student (S. Lano, personal communication, November 20, 2011).

q: So, shelby, where were you when you first encountered the zombies?
a: I was walking home from school.
q: What were they doing when you first saw them?
a: Well, there was a group of them huddled around this snow man, kind of grovelling in the snow around it.
q: Then you took a closer look?
a: Yes, and that’s when i noticed they were all very dirty an not even in winter clothing, it was really cold that day. but it wasn’t dirt, the snow was a dark red and it looked like blood. I screamed.
q: Your report here says that’s when they all turned to you and began “lumbering after you”?
a: Well it wasn’t really running, it looked like they had broken legs or something, I didn’t really care, they started moaning at me and I just ran.

q: It’s probably best that you did. Your also said that you thought they were going to eat you?
a: Well... they were covered in blood and snapping at me, what else would that mean?
q: Have you heard of any other reports of cannibalism in your area after or before this event?
a: A few local reports later, on tv. But they didn’t make a big deal out of it. Saying that it was all taken care of.
q: I wouldn’t be surprised if it was being sealed up from the media. Thanks for your time Shelby, and if you encoun ter anything similar, be sure to call authorities.

2011 december, - Cody Peterson, garrison leader / zombie ex pert (C. Peterson, personal communication, November 27, 2011)

q: Tell me about your first encounter with a zombie.
a: That was awhile ago, let me think for a sec... I think the first time I ever heard about the zombies was on a news broadcast before anyone in our community became face to face with one.
q: So you were prepared when they arrived?
a: Its almost impossible to be prepared. The first one I saw I couldn’t recognize ‘til it was up close. It must have been newly turned because there was little to no decay on him.
q: How could you tell it was a zombie and not some sick per son?
a: Well they always walk like their back hurts and like part of their body is heavier than the other.
q: What is another key attribute to notice when identifying a zombie?

a: Apart from the obvious?
q: Well, what's obvious to you may not be so for others.
a: All right... well, open wounds... injuries are a big give away
q: Why are injuries a big give away?
a: Because they don't heal, they don't bleed, and I don't care how big you are, you aren't walking upright on a shattered leg. A zombie doesn't feel pain like we do.
q: All right, lets talk about your experiences in califor nia. I understand you were ordered as a garrison leader over there?
a: Yeah, in a small town called Stockton. A few miles south of Sacramento.
q: Wait... not the stockten that was overrun in one night?
a: That'd be it. the town was old and pretty run down as it was. Looking back I don't think that was a good place to hold out, and we probably should have left sooner.
q: What was the attack like?
a: Some asshole set off signal flares as a joke and the zom bies noticed. They came at us in waves, moaning constantly, breaking through every barricade we set up in town.
q: How else did you try to stop them from advancing?
a: We did what we could... sandbagged streets, destroyed ramps. It was a small town and not much to work with. Plus we only had so much ammo, and the bastards wouldn't stop coming.
q: As a designer commissioned to provide protection for communities, is there any small advice you can give me about defense against the horde?
a: Raise everything. get it off the ground.
q: Well thank you for your time, Cody, I appreciate your ef forts.

Goals for Thesis Project

The main goals of this thesis project are to better myself in three different categories: The academic, professional, and personal. In the academic sense, a learning tool on how to assemble research and data. In the professional sense, a strong look to the future of what kinds of effort will need to be put toward real projects. In the personal sense, satisfaction about seeing a project through to the end and knowing I put my best effort into it.

The first category, academics, establishes the thesis project as the ultimate result of years of training in school. The goal in this category is to use all of the acquired skills from throughout my college career and compile a single project with them. The thesis project does not focus on a single element of my knowledge on the subject, but a cumulation of everything into one melting pot. I mix computer skills, research skills, writing skills, drawing skills, storytelling skills, and any other skill on the subject into a giant cauldron and stir them together to make a single element out of everything. The result is a mixture that becomes the thesis project. The thesis project is the ultimate result of my training as an architecture student at this school.

The second category is the professional environment. What I accomplish in this thesis gives me a sense of what the future holds as a designer or an architect. I will have to use everything I gathered from my academic environment and spill it onto my career in the real world. Already having worked in the real world makes me understand how important putting together a thorough project is, and how necessary it is. The smallest factor cannot be ignored and must be applied to any design.

The final category is the personal environment. The goals of this project, personally, are to pursue something that I have always found interesting, and that is not just zombies and horror stories. Or even just green design and sustainable architecture. It is more about my personality with storytelling. To me, all architecture is a story told through effort and creativity. Beautiful things emerge from the motivation of the personality. I am deeply motivated with this project and bringing it to a final result. Thus, feeling that way, I can create a story. The story, like all stories, can be true or false, fact or fiction. It is a story nonetheless, and important to the person telling it. The main goal of this thesis project, personally, is to create a story that I will never forget.

In conclusion, the main goals of this thesis project are to use my cumulative skills acquired through my college experience to show that I can complete a project to its utmost fullest extent and to tell a story that won't be soon forgotten. The main goal of this thesis project is to open my own mind as well as the mind of anyone who views and stands witness to this project's fruit.

Site *Analysis*

Qualitative Analysis

The patch of grassland this site is located on is nothing short of spectacular. It is not the stereotypical beach with therapeutic waves splashing in every few seconds; it is the quiet natural landscape that is separate from the struggles of life. The only human contact to be had are the small residences scattered in every direction, none within 1000 feet of each other.

The views to be had are wide open farmland with thickets of forest growth to break up the wind. When one sits on the site, he or she will be in complete solitude, with the exception of being surrounded, in fact, by numerous forms of wildlife. The exact plot of land is a former hunting ground for deer and pheasant. I, myself, have hunted these grounds, and found that the nature in this area is wonderful but not too overbearing.

The textures of the are a perfect response to the requirements Brooks (2003) sets in place when deciding on a location to set up a defense.

“Is it remote? Does it have a source of fresh water? Does it have the capacity to produce food? Does it have natural defenses?” (p.164)

The site in question fits strongly to all of the criteria Brooks lists. The site is in the middle of nowhere, therefor, remote. There are several lakes in the ten mile radius of the site, as well as a pond located directly south, about 300 feet, of the building location. Not only is the soil fertile landscape, but the region is prime hunting ground. Whether its vegetation or wildlife, food is a ready commodity. As far as natural defenses go, the building site is located in a small depression, surrounded by groves of trees to block vision from zombies, or even bandits. The site fulfills all the goals Brooks has in place, and serves as a textbook example of what a site should be.

Refer to the sun path diagram, page 71, to discover how the sun rises over the location. The zone, in the open, bears the full burden of the light and its warmth, while when around the border with the trees, the sun may never reach the ground. Even in the winder, the solid green of pine trees clashes with the pastey sky and snow. Even in the middle of farmland, this spot of nature remains untouched by the development of man and displays its beauty for all to behold.

Temperature on the site is often severe, ranging from very hot and mosquito heavy in the summer, and freezing in the winter. The upper portions of the site are subject to the brutality of the winter wind, while the other parts of the site are completely sheltered, giving a comfortable location during the bitter moments of the season. The trees are the only shelter from the wind, which seems to spread across the surrounding farmland with a harsh intensity. It is a flat landscape outside the grassland site, and only other groves of trees offer the brief sanctuary.

As I stated before, the site is a former hunting ground of local inhabitants, including myself, and there are, in the trees, the scattered remains of deer stands. The small wooden boxes in the trees provide a sense of an overseer watching over one at all times, protecting one. The hunters, with the recent infection, have all since abandoned the site. Hunters have taken up a different sport, a different type of game, in this environment. deer and pheasant have lost their appeal.

When talking about distress on the site, one basically assumes that something is a danger to the site. In this case, with the surrounding population gone, there is near nothing. the only stress on site would be, towards humanity, the flourishing of nature. The trees are growing ever steadily. Plant life creeps over the old remains of deer stands, giving the impression that they are already long forgotten ruins of a past we are unable to return to. The pond, which several years ago almost dried up, seems to have not regained its composure, but steadily, some of its pure color, suggesting it is healing, in a way. The site had one old dead tree on the east side of the pond, but it's scarcely noticeable now. The lush life around the pond feeds off its bulk and uses it to grow even further.

It is for all of these reasons that I see the site as a personal sanctuary, and a perfect location for people to avoid the zombie hordes and turmoils of mankind. The community shelter will be in a location set up for healing and safety. physically and mentally. With the views ranging off in every direction, everything can be seen for miles. Often times, when I was in a deer stand, I would only see deer about a mile off site in a grove of trees too far away to shoot. The place is a natural look out. Its impossible for me to use the exact words to convey the enjoyment i have of such a place. It is simple. It is complex. It is inspiring. It is serenity. It is quiet. It is loud. It is the middle of no where. The center of everywhere.

Quantitative Analysis

The soils in sibley county are very widespread in type. The soil texture diagram to the right shows the averages in the county and the percentages of the properties of soil types. The exact site of this thesis is composed of three types of soils, classified as the series of Lester, Okoboji, and Le Suer. Here is some basic information on the soils from the usda.

lester series
- depth class: very deep
- drainage class: well drained
- permeability: moderate
- landform: till plains
- parent material: calcareous, loamy glacial till
- taxonomic class: fine-loamy, mixed, mesic mollic hapludalfs

le suer series
- depth class: very deep
- drainage class: moderately well drained
- permeability: moderate
- landform: till plains
- parent material: calcareous, loamy glacial till
- taxonomic class: fine-loamy, mixed, mesic aquic argiudolls

okoboji series
- depth class: very deep
- drainage class: very poorly drained
- permeability: moderate
- landform: till plains
- parent material: silty local alluvium / calcareous till
- taxonomic class: fine, montmorillonitic, mesic cumulic haplaquolls

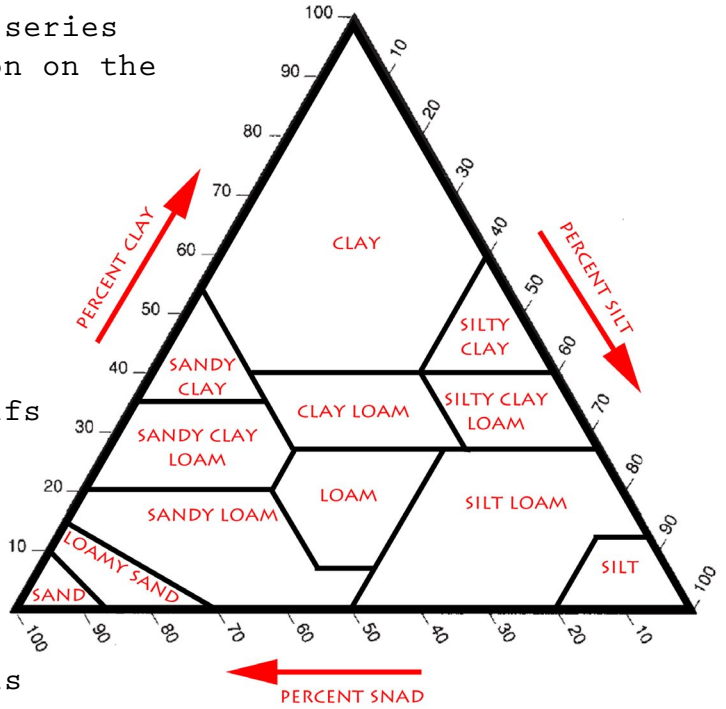


Figure 18: Soil texture diagram

The utilities on site are minimal, as nothing surrounds the area but farmland. There is an extension of power lines near highway 25, but that is the closest form of utility in the area. Also, with vehicular traffic, highway 25 is the most dense in that respect. although the density is very minimal. On average during the day, maybe one car passes by every ten minutes. The farms in the region are active, however, and most of the noise of the area will come from tractor vehicles during farming season. In the winter, the landscape is utterly silent. Pedestrian traffic is zero. Nobody will be walking through the farmland at all, unless that person is a zombie.

The slope analysis of the site shows that the site is mostly flat at its center. There is a slight slope when heading towards the site from the south and even less so to the sitefrom the west. The landscape is relatively flat going eastward out of the site but blocked by trees. The slopes on the south and westward side provide a sense of security in that, once you enter the space, one feels separated from where he or she came. The drainage of the site leads directly into the pond at the south eastern side, and little land work will be required to keep the flow directed that way. A building on the north western end of the site will be a perfect location, considering the slope, the blockade of trees, and the drainage towards the pond.

The physical site character is much related to the quality. About 70% of the site is grassland, 25% trees, and about 5% the pond. Nothing seems to be decaying, but everything seems to be growing.

Here is another blow up map of the site. Labelled in red, the site is a elongated rectangular shape. To the very north is highway 25, which sees most of the traffic in sibley county. There is a small local road to the south, 206th street, that is trafficked by local dwellers only. The small black line leading north from 206th st is an existing gravel road to the site that we used when hunting. The properties of farmland are bordered in red, along with the oddly shaped government land to the north and east of the site.

The vegetation cover of the area is minimal, but it is existent. Mainly for use of wind barriers, the tree groves provide an ample source of wildlife and shelter for those who seek it. Visible on this map are two small residences to the north, and other than those spaces, there are no other locations for inhabitants, other than one plot not registered on this map located to the southeast of the site. Compass directions are relative to the position of the map, i.e, the top is north, the bottom is south, ect.

Figure 19: Site context diagram

Photogrid of Site

These photos were taken at the site location in the afternoon of an autumn day.

Figure 20: Site pictures

Figure 21: Site pictures

Figure 22: Site pictures

Figure 23: Site pictures

Figure 24: Site pictures

Figure 25: Site pictures

Figure 26: Site partial panoramic

Climate Data **Diagrams**

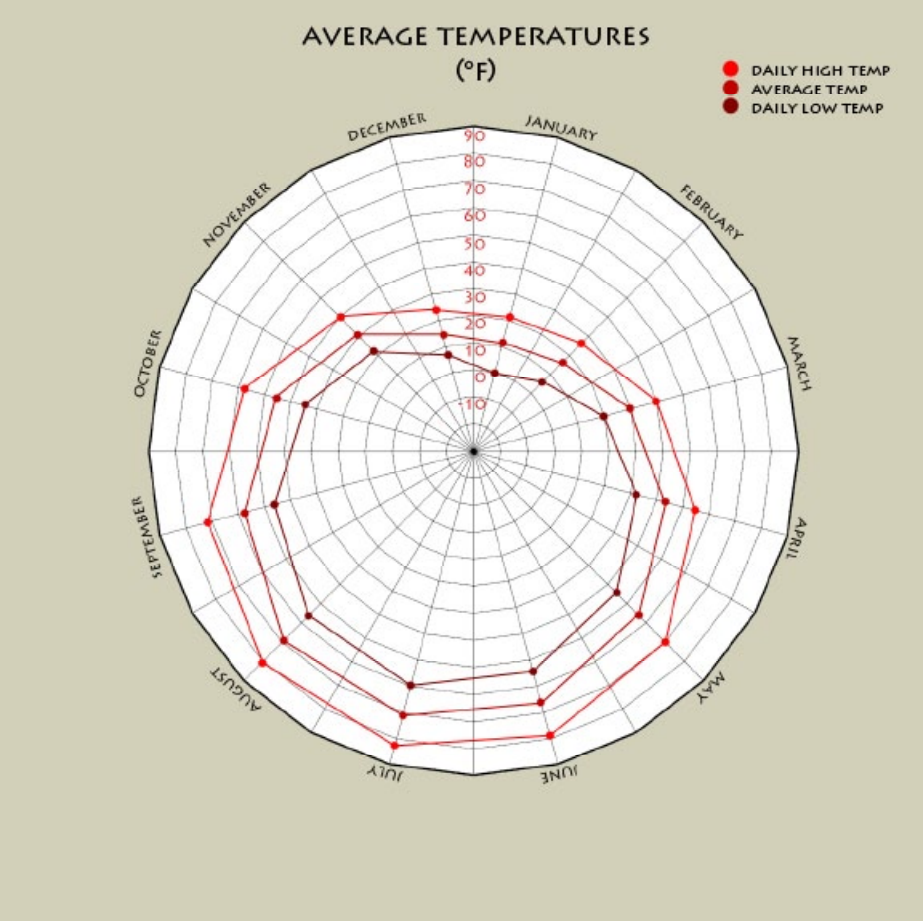


Figure 27: Average temperatures of Sibley county

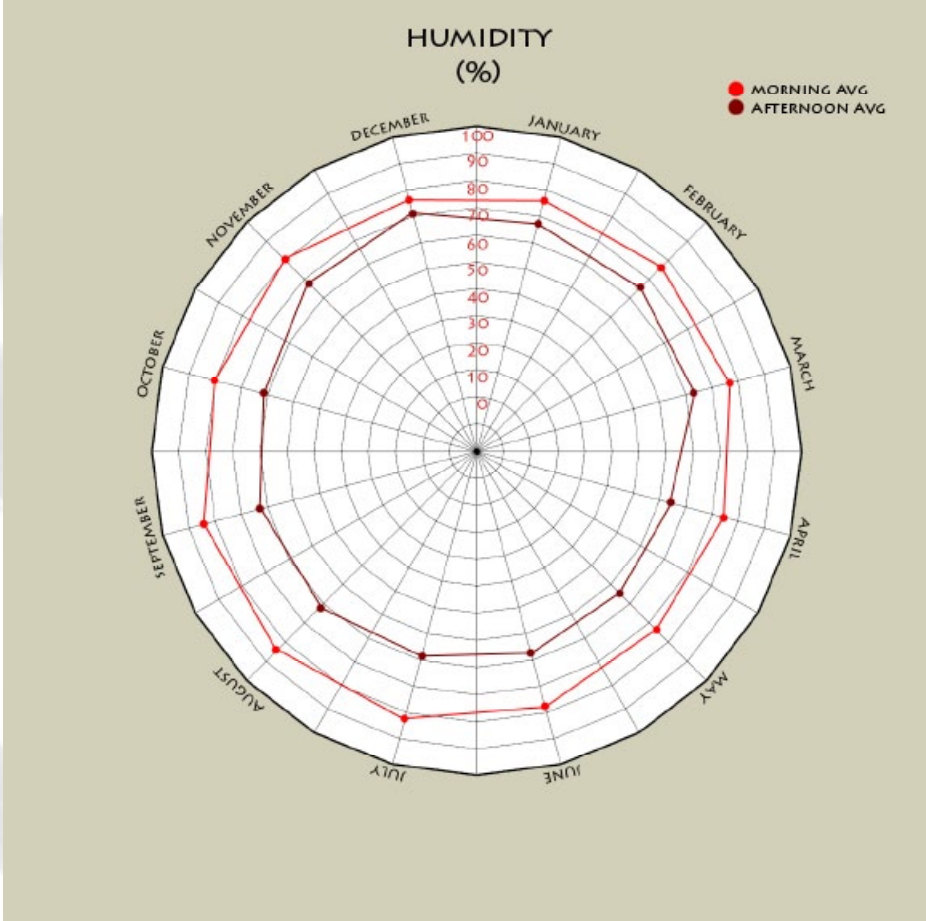


Figure 28: Humidity of Sibley county

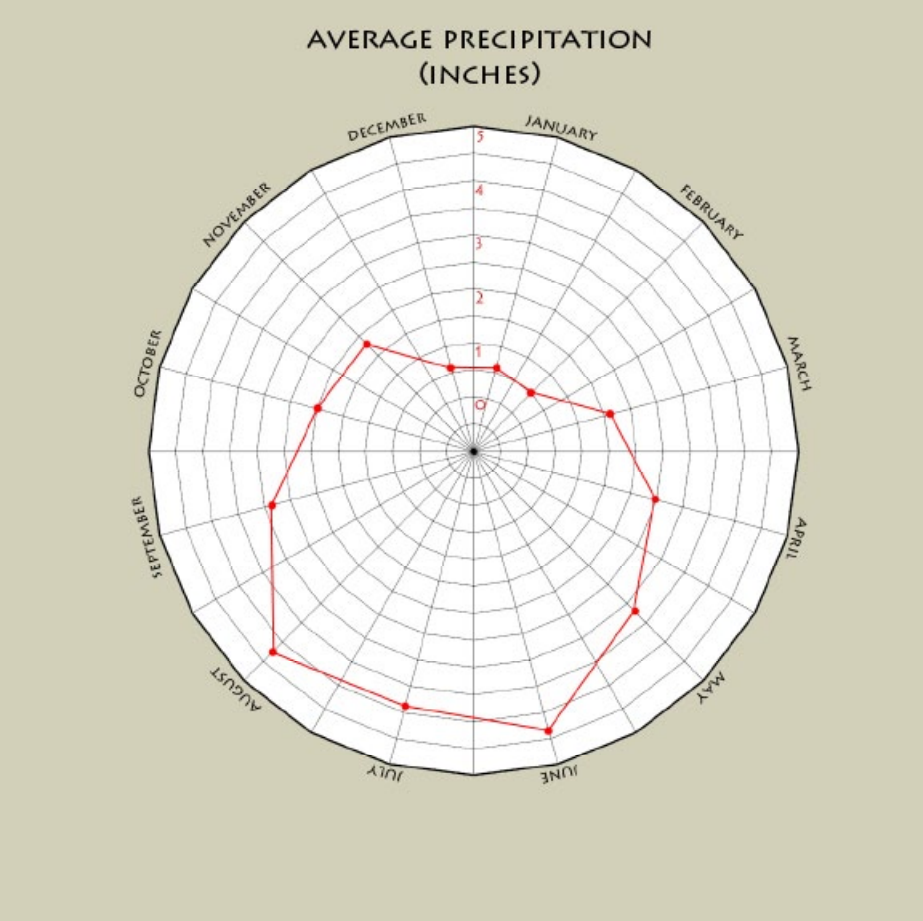


Figure 29: Average precipitation of Sibley county

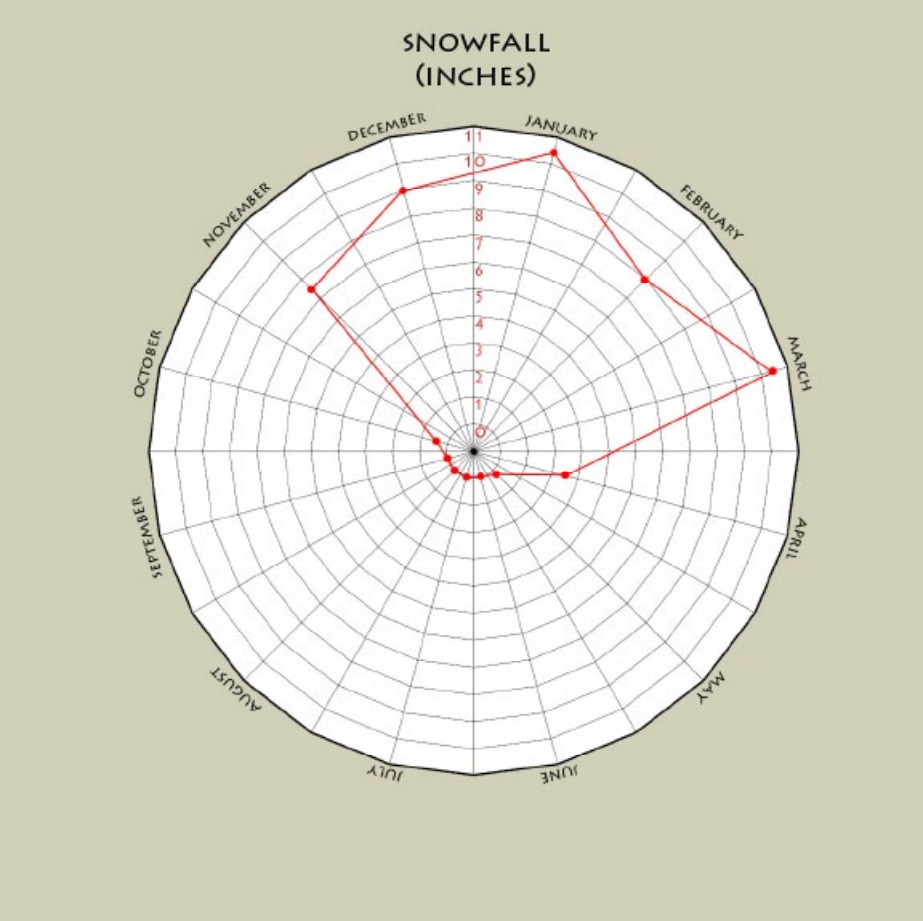


Figure 30: Average snowfall of Sibley county

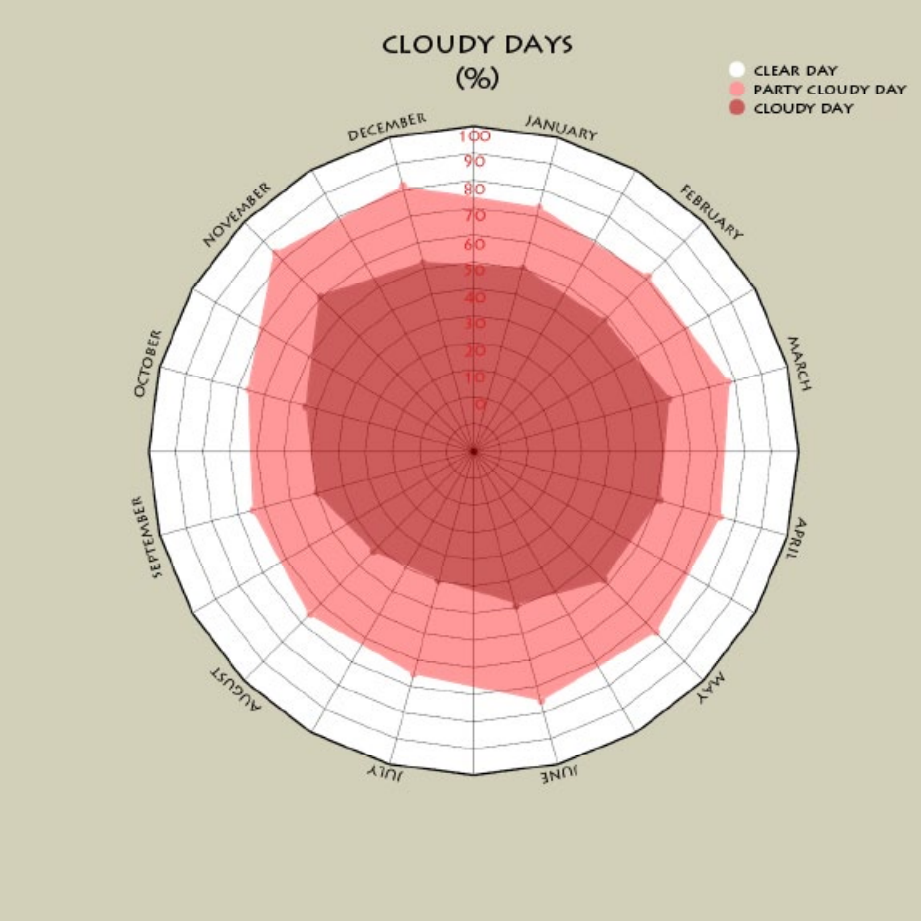


Figure 31: Cloudy days of Sibley county

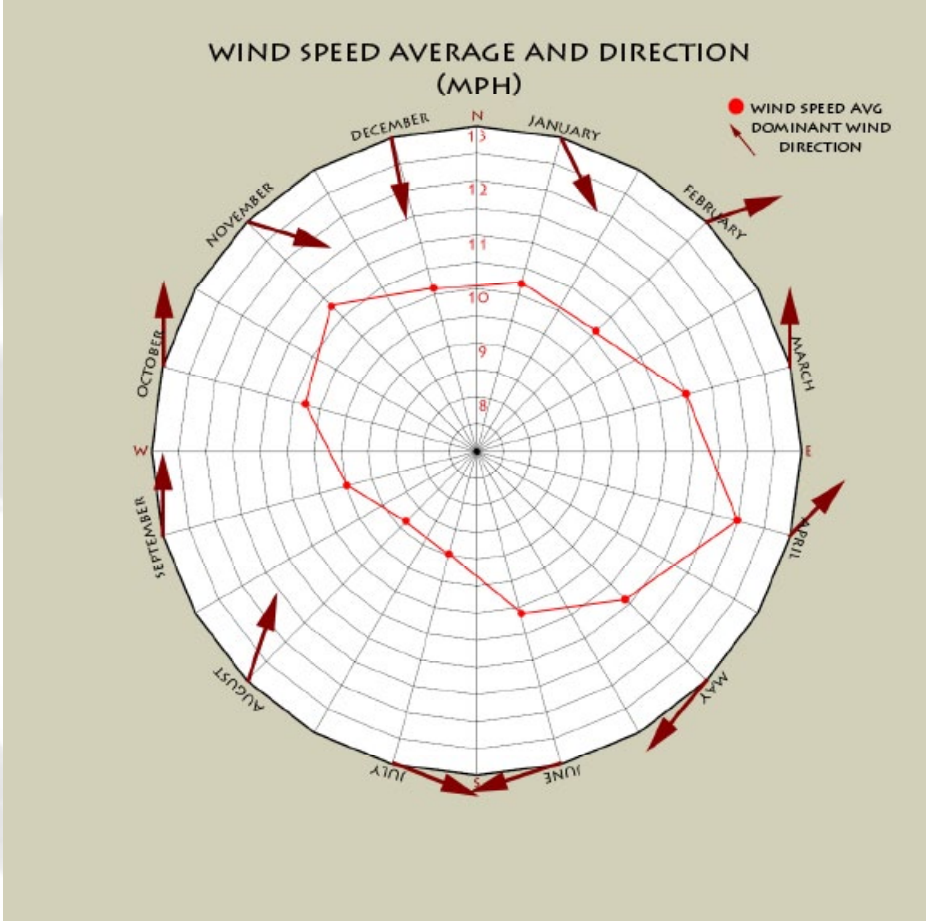


Figure 32: Wind speed averages and direction of Sibley county

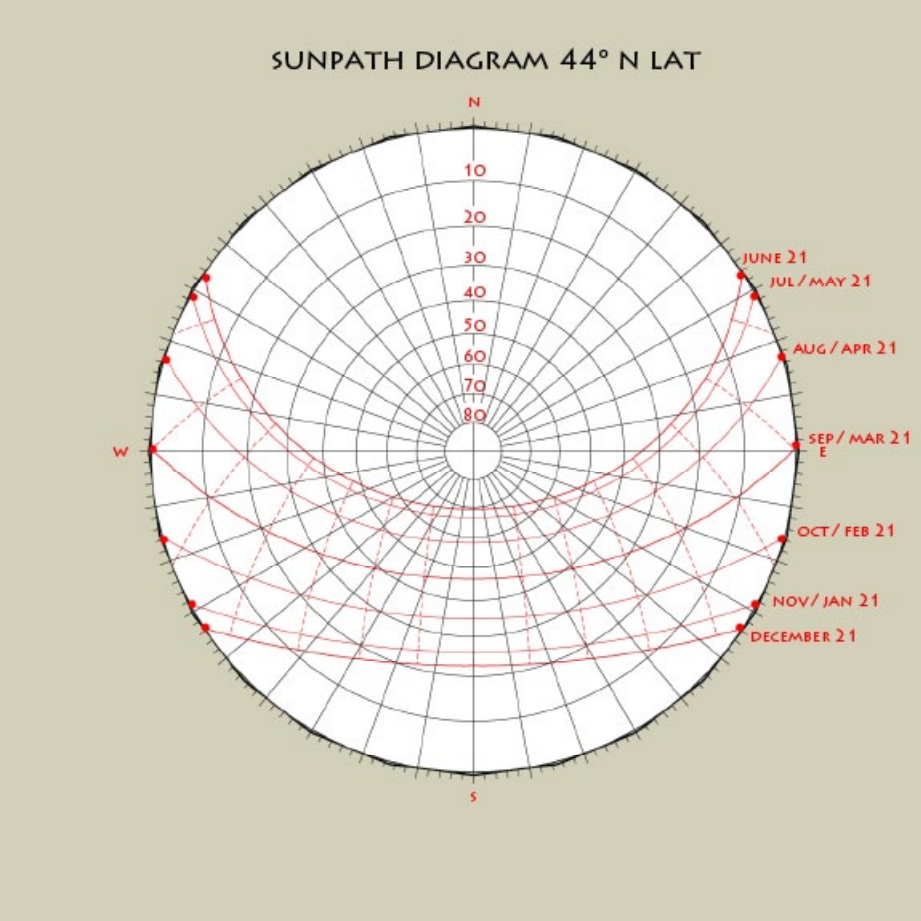


Figure 33: Sunpath diagram at 44 degrees N Latitude

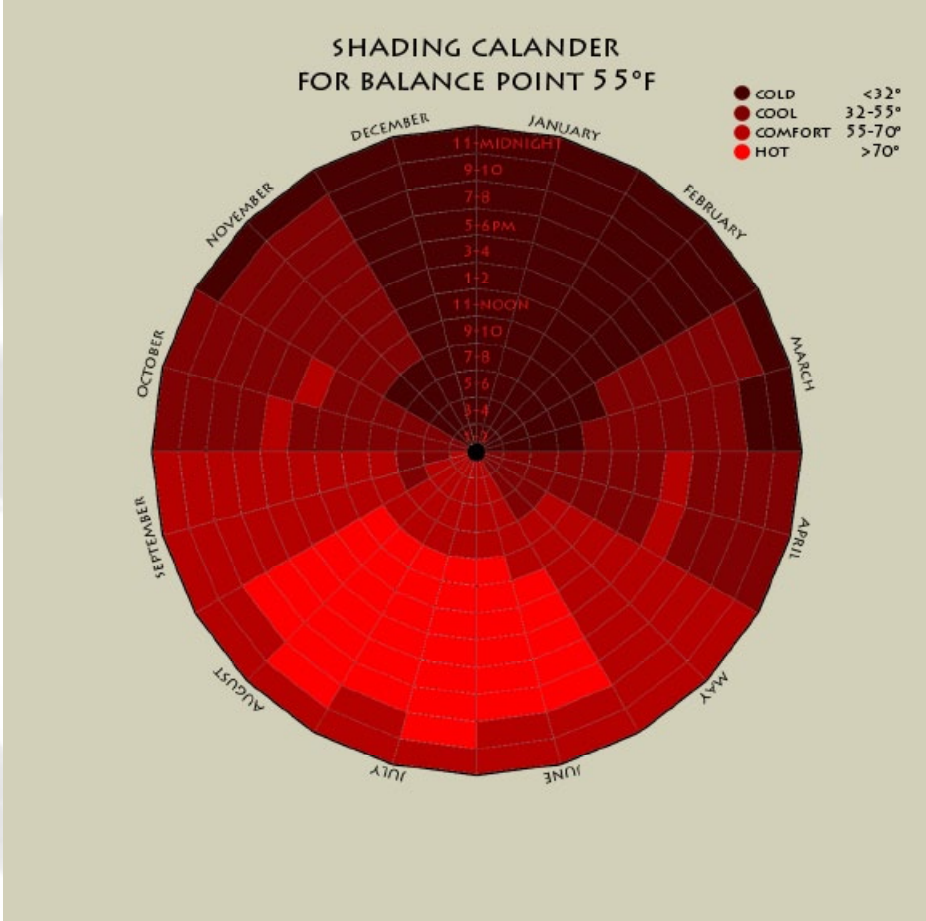


Figure 34: Shading Calander for balance point 55 Degrees F of Sibley county

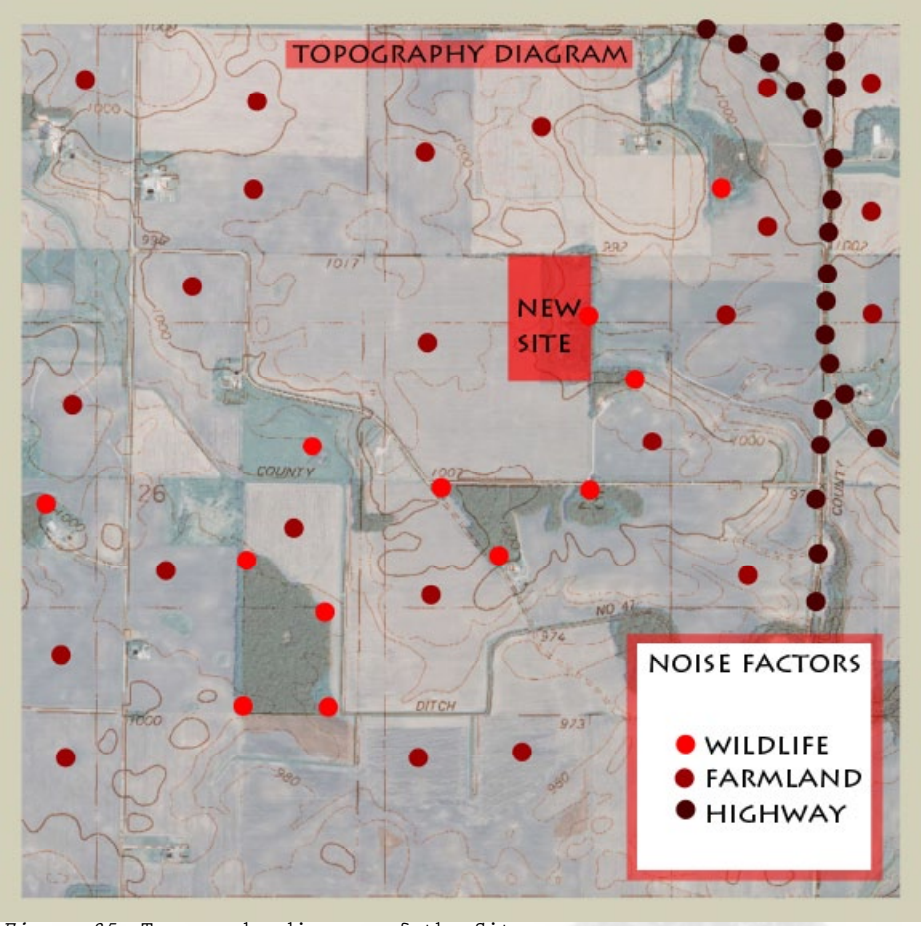


Figure 35: Topography diagram of the Site

Programmatic *Requirements*

Initial Space Allocation

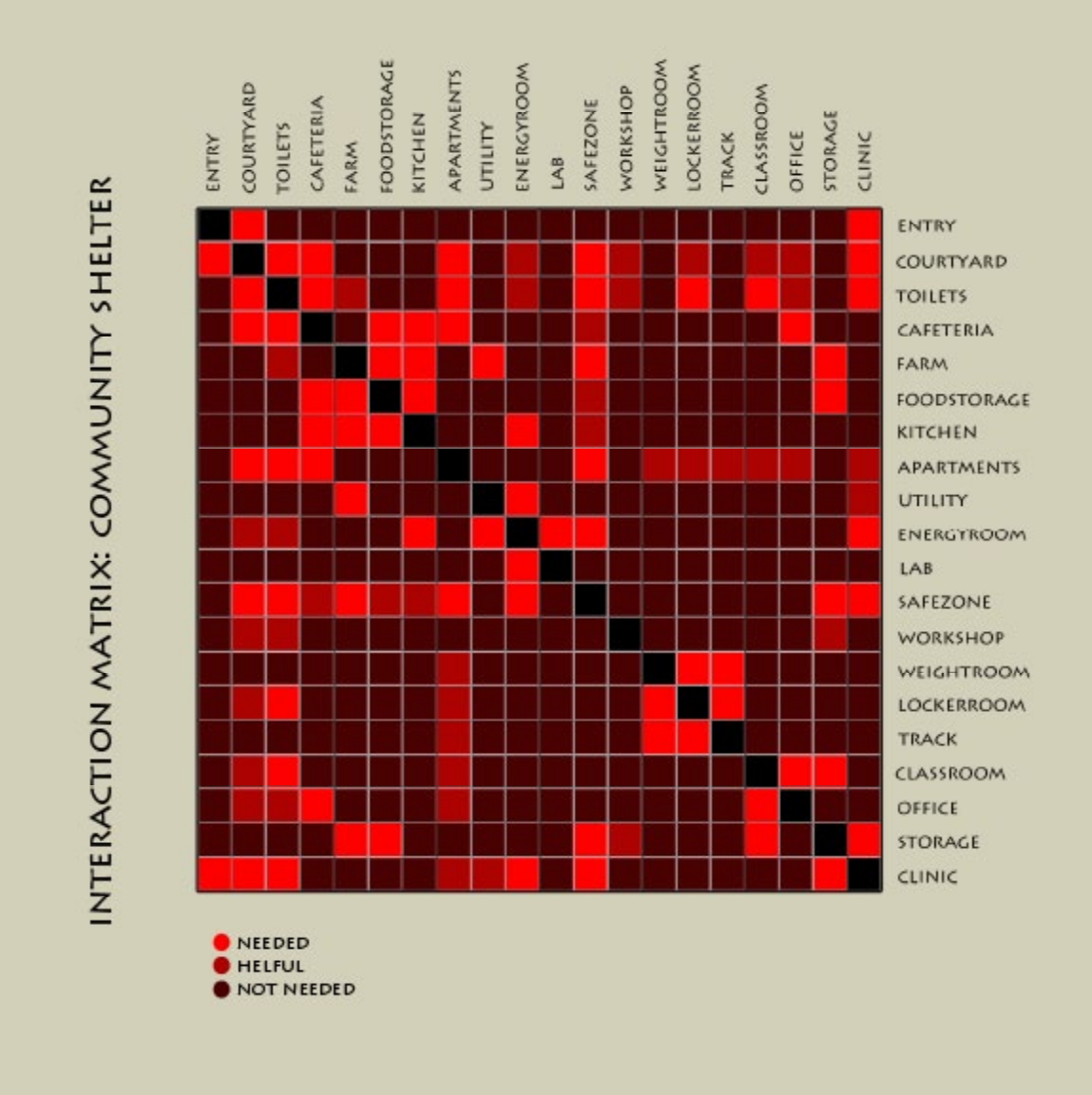


Figure 36: Interaction Matrix, initial concepts

Initial Program and Percentages

SPACE ALLOCATION

TOTAL SQUARE FOOTAGE PERCENTS

HEALTH- 35%

WEIGHT ROOM 15
TRACK 20
LOCKER ROOM 10
CAFETERIA 20
FARM 20
FOOD STORAGE 10
KITCHEN 5

WELFARE- 25%

CLASSROOMS 10
OFFICES 10
LAB 5
CLINIC 35
COURTYARD 40

SAFETY- 40%

ENTRY 10
APARTMENTS 45
STORAGE 35
ENERGY ROOM 10

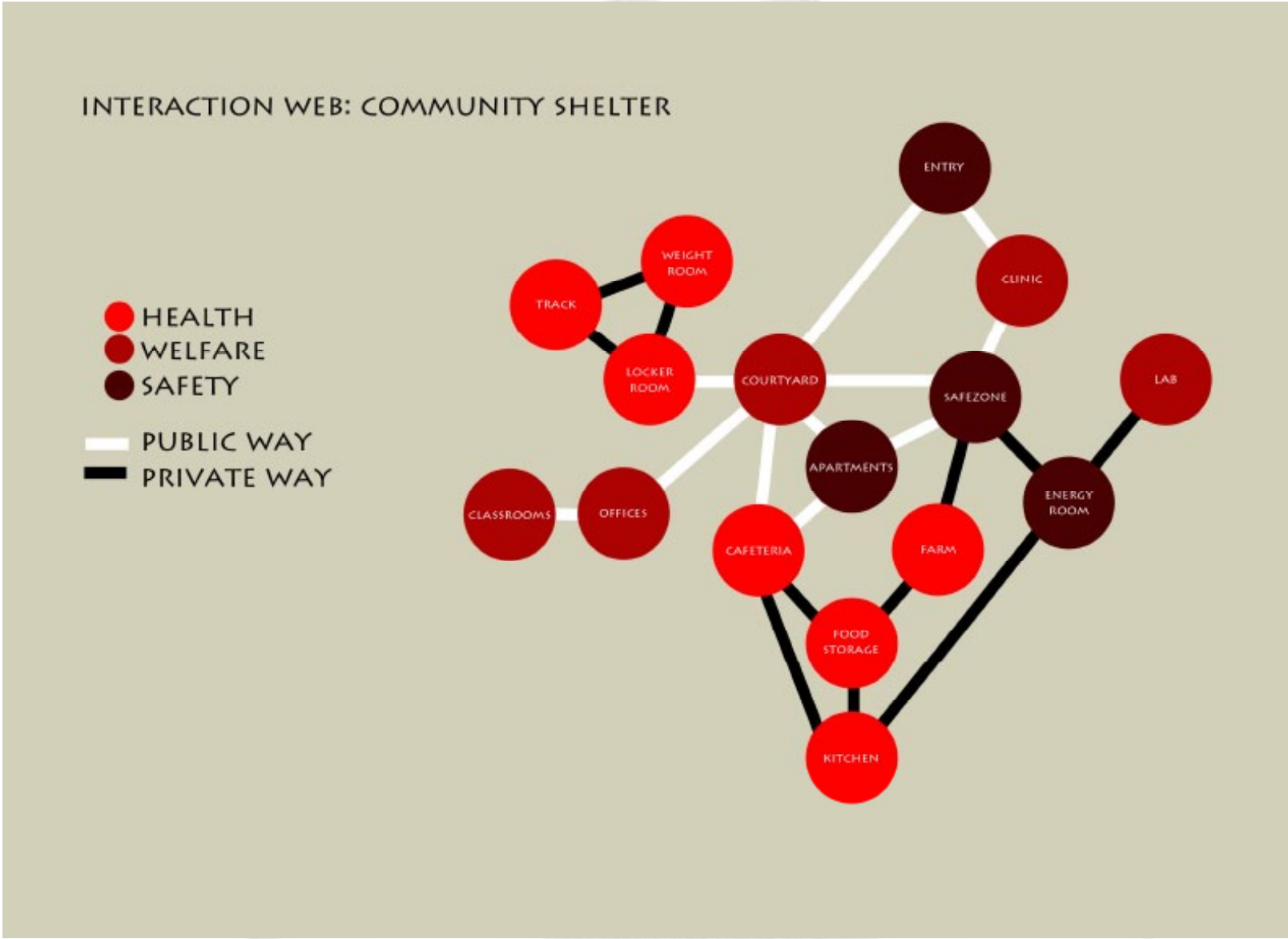


Figure 37: Interaction Web, Initial concepts

Revised Programmatic Requirements

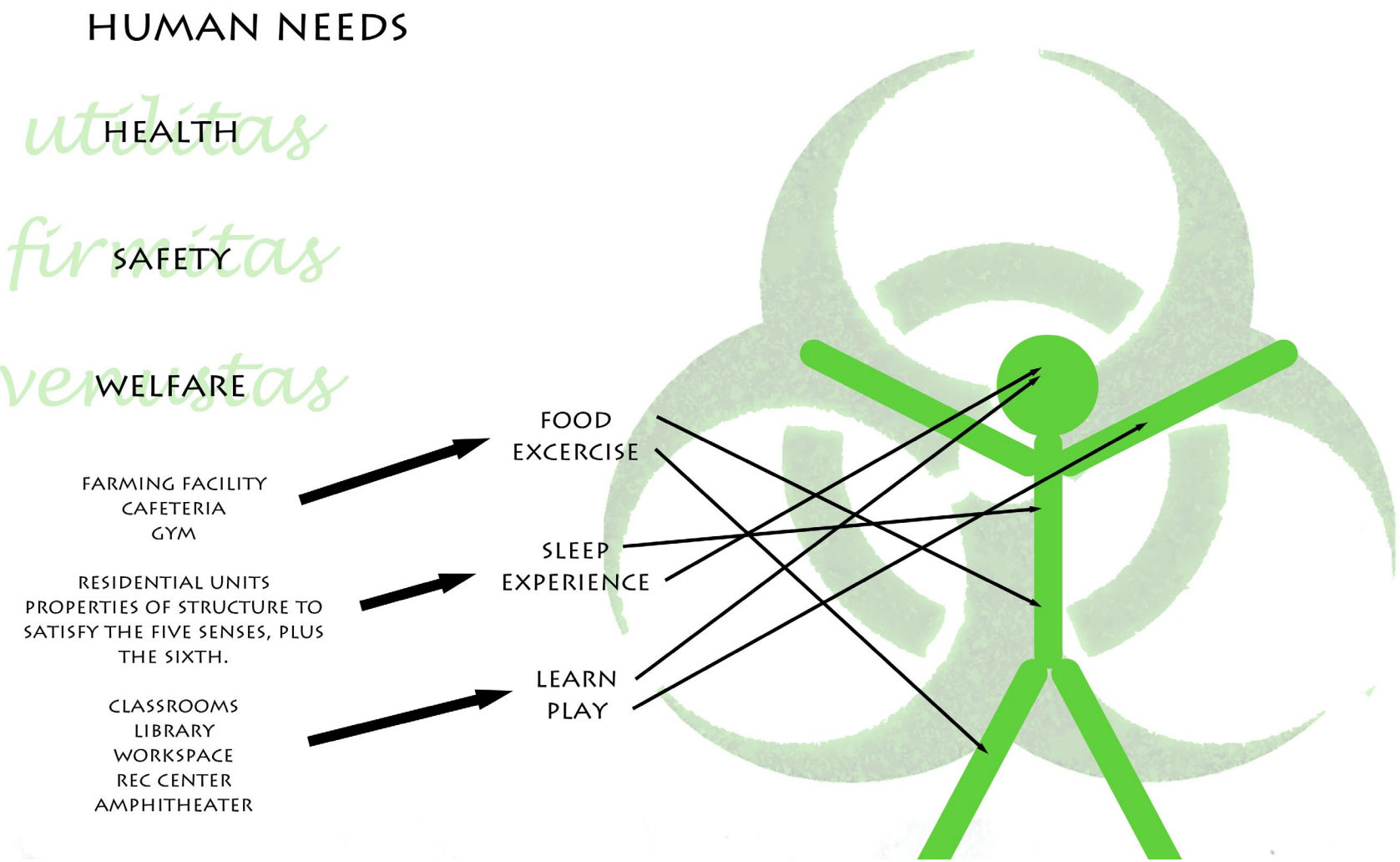


Figure 37: Revised programmatic requirements.

Appendix

Zombies

In this section, I will use the knowledge acquired by my research to describe, in the best way I can, what a zombie is. This information will prove essential to every person in risk of encountering a zombie, which means everyone, and these quick facts and summaries will be a required tool when trying to survive in this environment that has changed forever for humanity.

Brooks's *Zombie Survival Guide* (2003) offers an extensive explanation of what zombies are, where they might come from, their strengths and weaknesses, myths and legends, facts and fiction, and everything one might ever hope to understand about zombies. For the purpose of this thesis, however, I will provide only a fraction of that knowledge so one know's how to identify them, and how to evade them, and even how to kill them in order to survive. Survival is the ultimate goal of this scenario, because the hordes, as stupid as they are, are relentless and will never give up.

The basic elements I will cover about zombies are their behavior, and their physical attributes. It is not terribly important, at this point, to understand where they came from because in all seriousness, they are here anyway, and there is no way to stop them. All we can do is identify and survive.

The *Zombie Survival Guide* defines a “zombie” as an animated corpse that feeds on living human flesh. Animated corpse means brought back from the dead. A zombie is dead, no matter how you look at them. The person that owned the body at one time is dead, and in its place, upon animation, is a monster; a non-thinking, non-interactive beast that has only one function - to eat.

So if they are dead, how do they move around and attack? the virus, solanum, has unknown origins and is the trigger to the death of a person and the reanimation of that persons body and brain. The virus is passed through blood and bodily fluids. If a person infected with solanum bites you, the virus is passed on. This is how the infection spreads. A normal human will be attacked by an infected zombie and in the struggle get bitten or wounded. It can take hours for the human, who was bitten, to be consumed by the virus, then die. The virus has a 100% kill rate. after a few hours of death, the brain will reanimate. I say brain because the brain is the only thing that is “alive” at this point. The heart does not pump blood, and the organs do not digest food. Reports have been found of zombies with 65 pounds of human remains in its burst stomach. It is unknown exactly how the virus reanimates the dead, but the reanimated brain is what controls the movement and the drive to feed. Once you understand all of these facts, you start to get a grasp of how they behave.

The behavior of a zombie is very easy to understand and predict. They are, actually, very stupid creatures. They have no regard for their own safety, they plunge headlong over cliffs, and have no fear. If a healthy human stood in an open room, holding out a spear at head level of an attacking zombie, the zombie would move towards the human, and impale himself on the spear. very stupid creatures. However, it is their fearlessness that makes them dangerous. A zombie will keep hunting until 1) his or her brain is destroyed or 2) his or her muscles and body have decayed so much, that they cant support its body. However, if they are decayed, they can still pass on the virus, so do not ignore a "motionless" zombie on the ground. Zombies are also emotionless. They will attack a person no matter who that person is. If one finds that a best friend has been turned, there is no chance to persuade that now undead friend to stop attacking. Never forget, once they are reanimated, they are no longer a friend. There is also one final thing to a zombie's behavior. They hunt endlessly. A zombie will keep moving towards movement and sounds until he or she locates food. When he or she does, his or her jaw will drop and he will release a gut clenching moan that does not end until he or she starts eating. This moan has driven people to madness. (2003)

The physical attributes of a zombie have often been played up in hollywood and other fictional stories. A zombie does not have super human strength. A zombie will not run faster than a horse. A zombie cannot jump ten feet into the air. A zombie cannot communicate with you. As Brooks so eloquently states. "Never forget that the body of the undead is, for all practical purposes, human." (Zombie Survival Guide 2003)

Sight, sound, smell, taste, touch, and a secret sixth sense will be discussed to give knowledge about all a zombie is and can do. (Zombie Survival Guide 2003)

Sight:

The eyes of a zombie are no different than that of a human. A zombie can see as far as a human and distinguish a human from another zombie as easily as we can distinguish an apple from a banana. (p.6)

Sound:

Zombies, unfortunately, have excellent hearing. Not only can they hear very well, they can tell which direction the sound comes from. a danger with this is that zombies are more attracted to sound than sight. They follow sounds like a moth to flame. however, there is one case where distractions cease to exist, and that is when they locate and identify food. (p.7)

Smell:

A zombie's sense of smell is heightened. Debate has risen as to why some of their senses appear to be greater than ours. One conception is that when they are reanimated they rely on all of their senses equally, which is different than a normal human. We rely on mostly sight. They have been known to smell the aroma of fresh corpses from more than a mile away. (p.7)

Taste:

Little is known about their taste buds, but they are keenly able to recognize living flesh from recently deceased. They prefer human. (p.8)

Touch:

Zombies have no physical sensations, no sense of feeling whatsoever. As mentioned before, they will not feel a blow to the gut or the pain of severing a limb. Even if the entire body is mortally wounded (in a human sense), it will never stop attacking. (p.9)

Sixth sense:

It is important to list this sixth sense because it baffles everybody. Reports have been given that zombies have been removed of all their sensory organs and methods but will still locate fresh humans to attack. Humans do not use all of their brains in their life. Could the virus reanimation activate some hidden part of our brains? (p.9)

Healing:

A zombie does not heal. Any wound it sustains remains until it dies. A zombie is constantly decaying after reanimation. It is estimated they can survive as long as three to five years after reanimation. (p.9)

Reproduction:

Zombies cannot reproduce. (p.12)

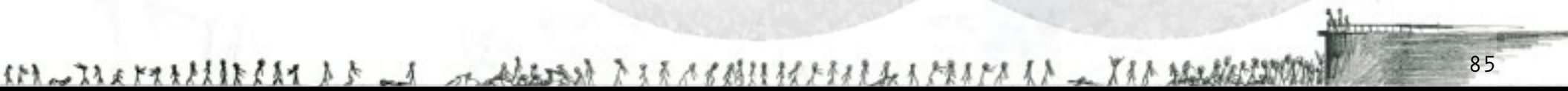
Strength:

A zombie's strength is based on the human who died. A very buff man will turn into a very buff zombie. A very weak man will make a very frail zombie. A zombie does not get exhausted and will continue its effort until all his or her muscles are destroyed. It has been recorded that a barricade that has endured the effort of five struggling humans fell to one stubborn zombie. (p.13)

Speed:

A zombie's movement is limited to a shuffle, slouchy, advance. A zombie cannot, so to speak, run or jump. Their only apparent speed is gauged by the length of their legs. Taller zombies will shuffle along a lot faster than a short zombie. It is their lack of coordination that prevents them from moving about like we do. However, they do not tire, so one should be aware when one tries to out run them. (p.13)

Those are their basic behaviors and their physical attributes. Once one understands all of their functions, one can start to put together how to avoid them and protect oneself from them. The focus of this thesis is to survive. We survive by protecting ourselves from them, and living in an environment that can constantly provide us with the things we need. Surviving is sustainability. The ability to sustain.



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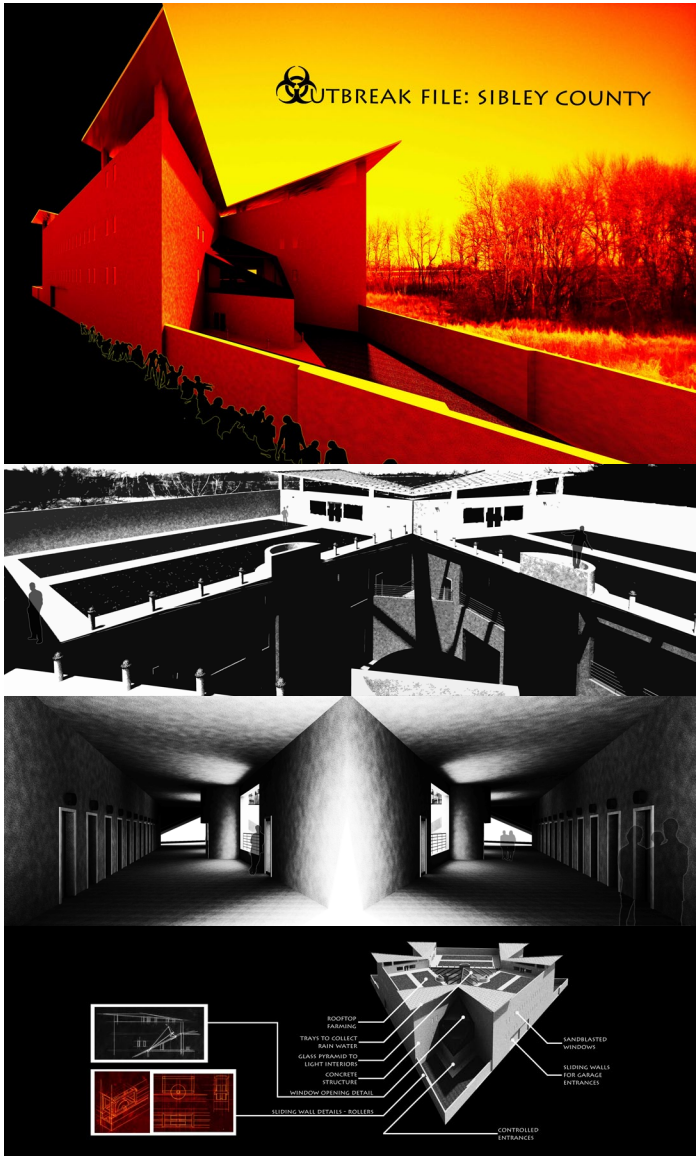
Project *Images*

Figure 38: Thesis boards on the 5th floor of Renaissance Hall

Figure 39: Thesis site model being painted by myself

Figure 40: Model of Community Shelter



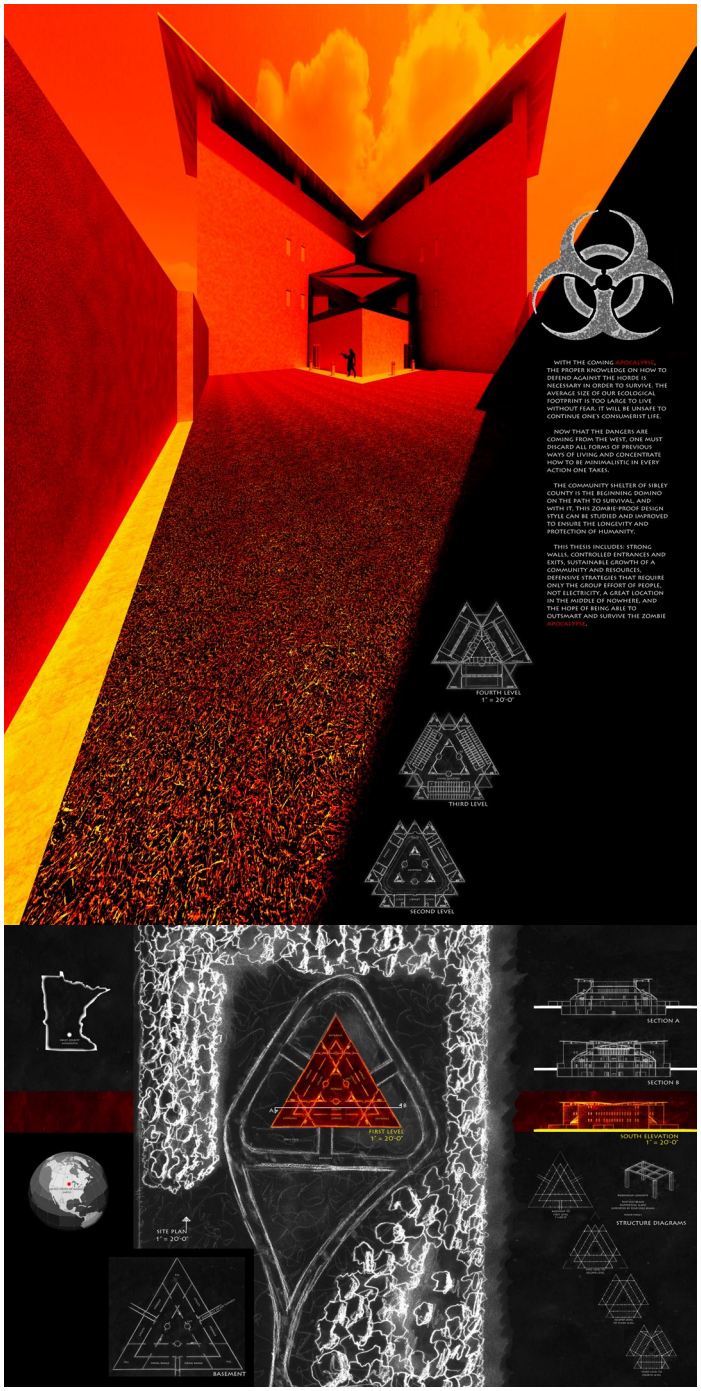


Figure 41: Presentation boards from Spring semester

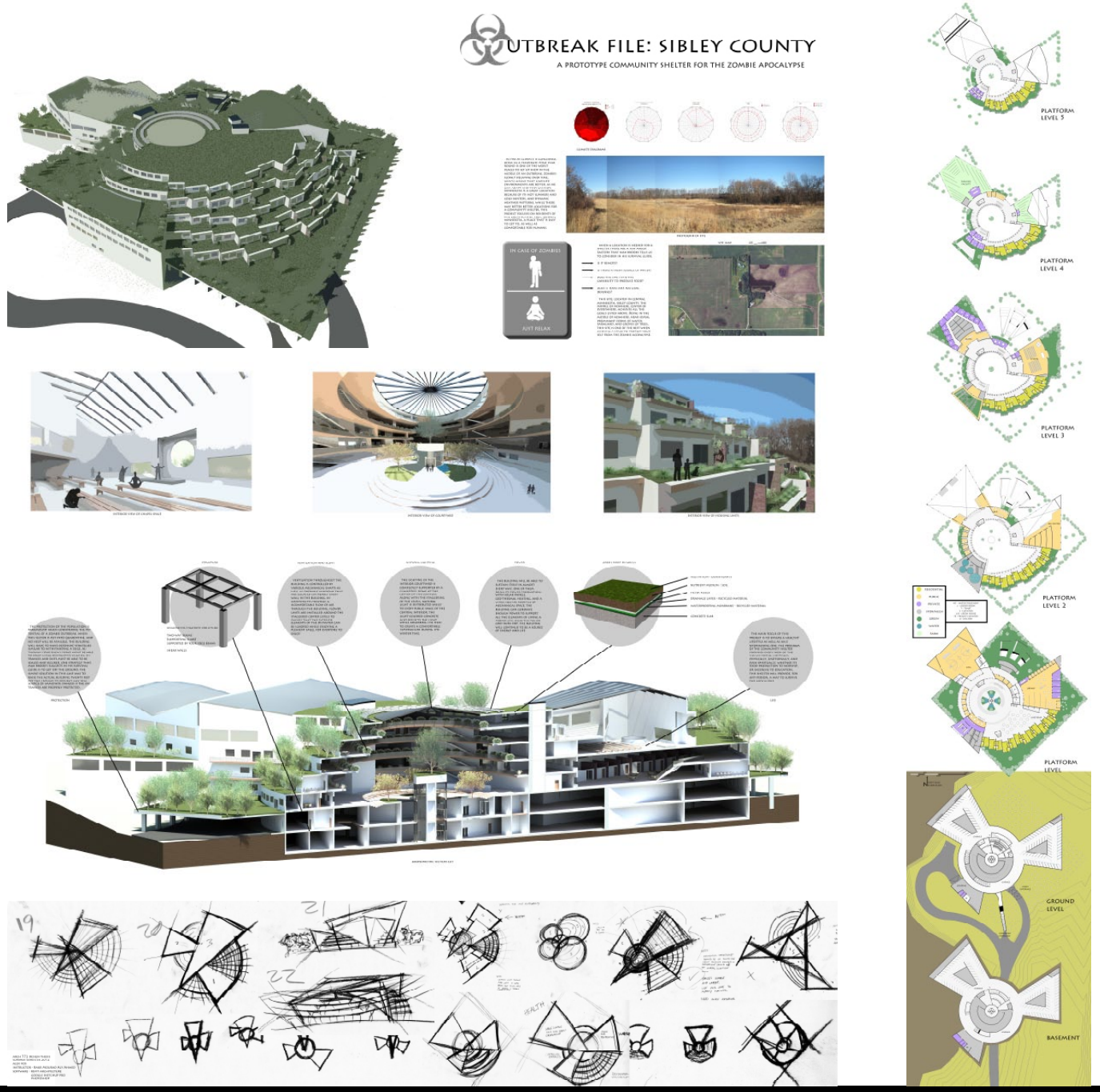


Figure 42: Presentation boards from summer semester

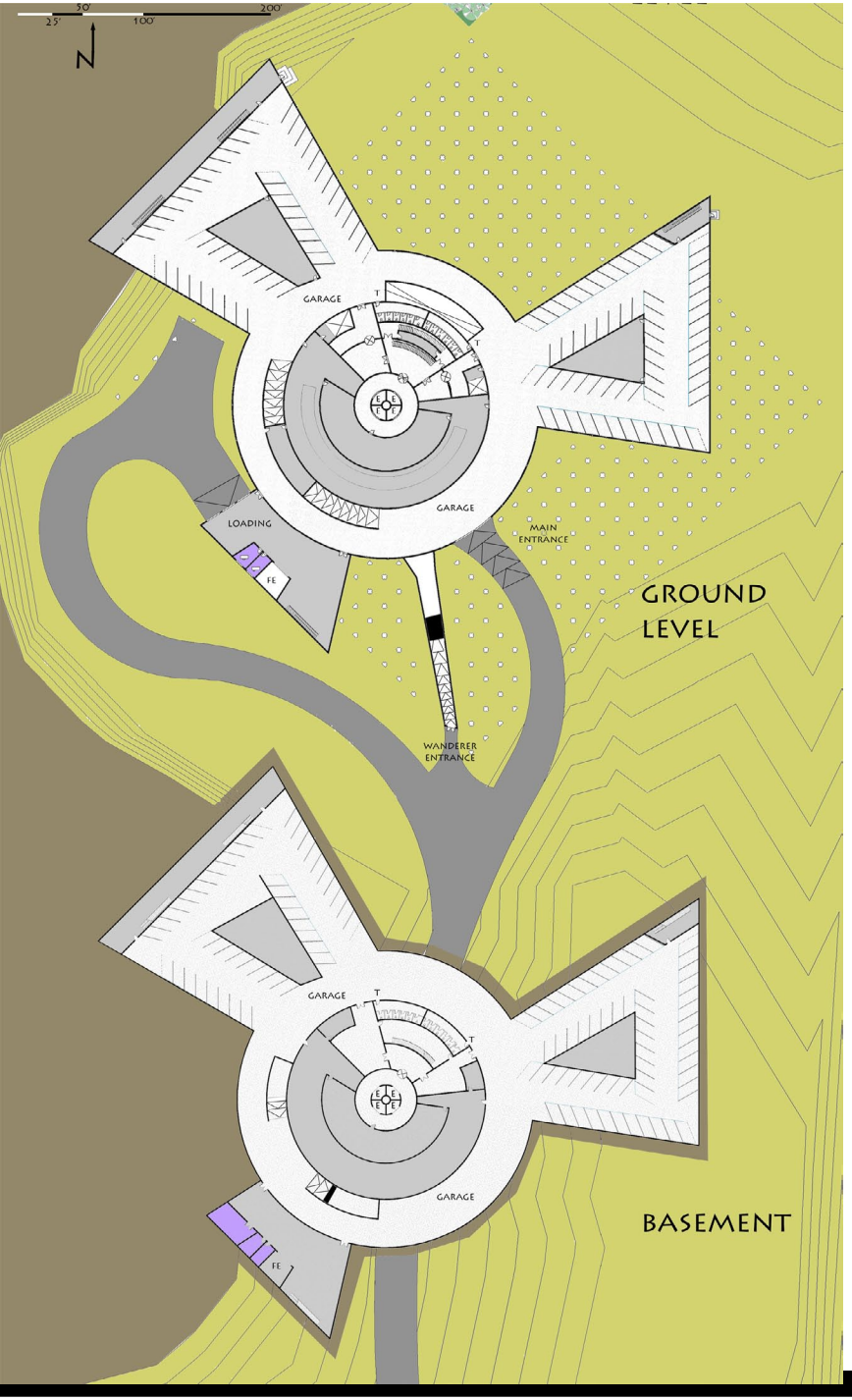


Figure 43: Basement and Ground Level plans

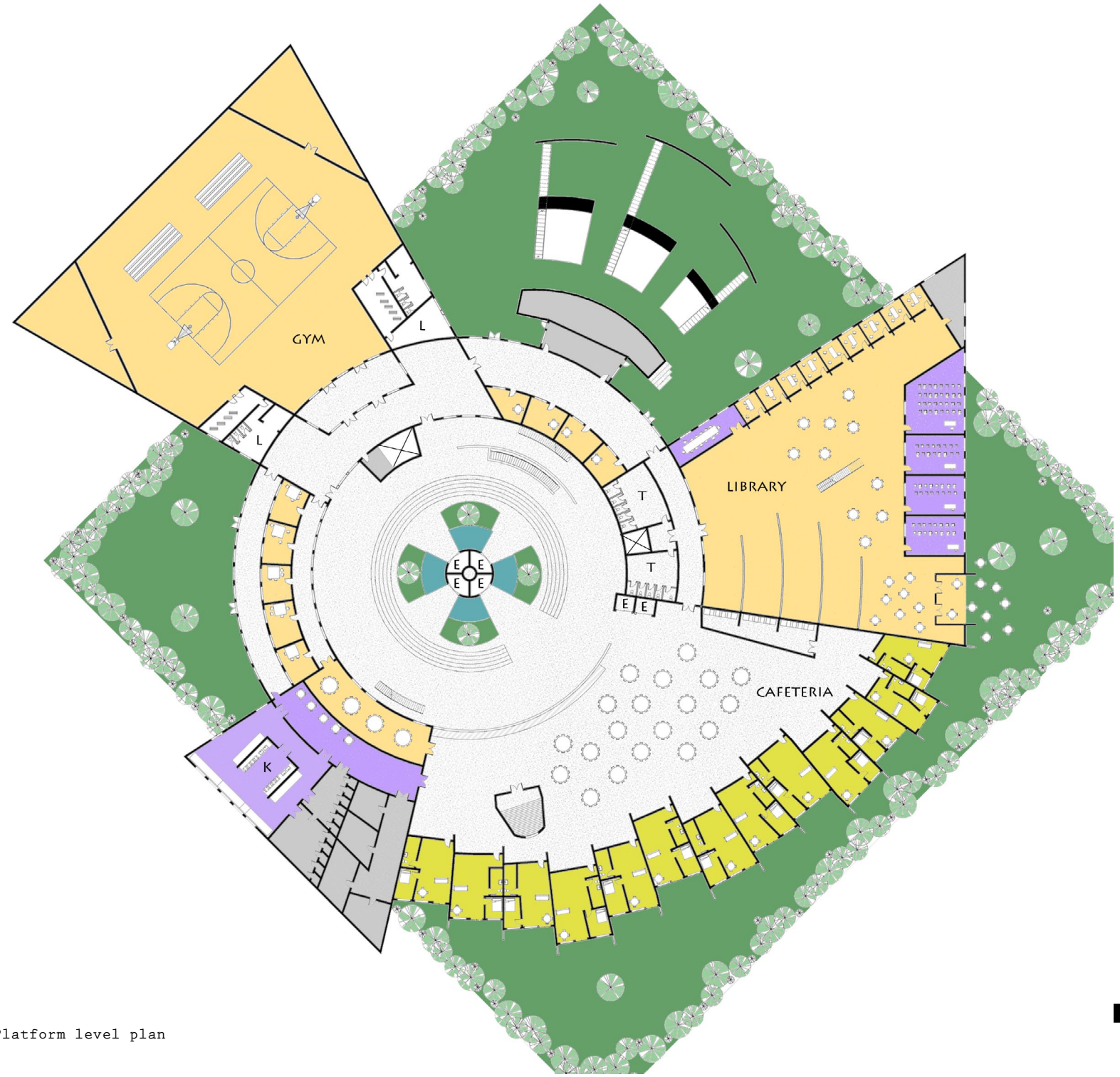


Figure 44: Platform level plan

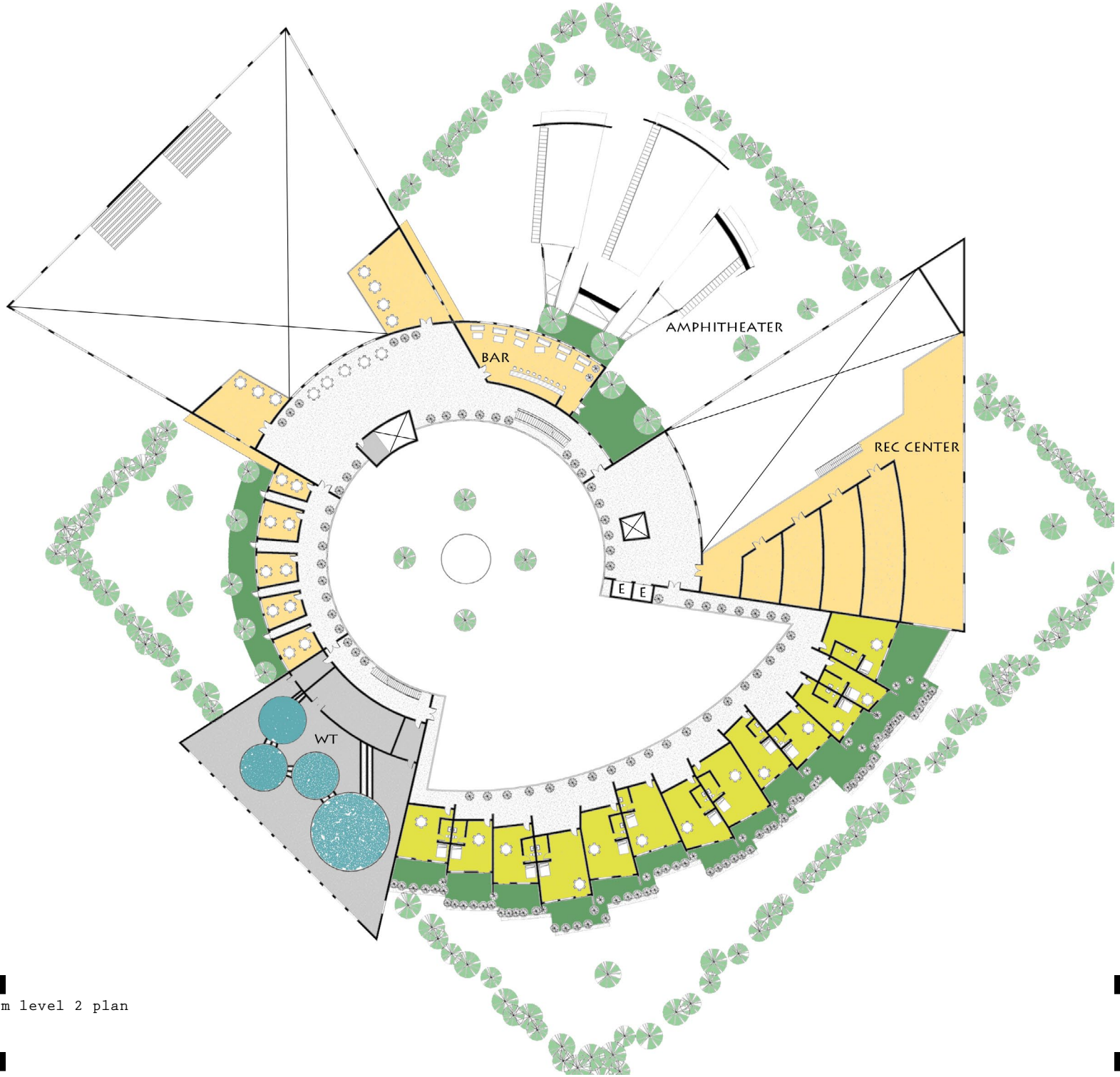


Figure 45: Platform level 2 plan

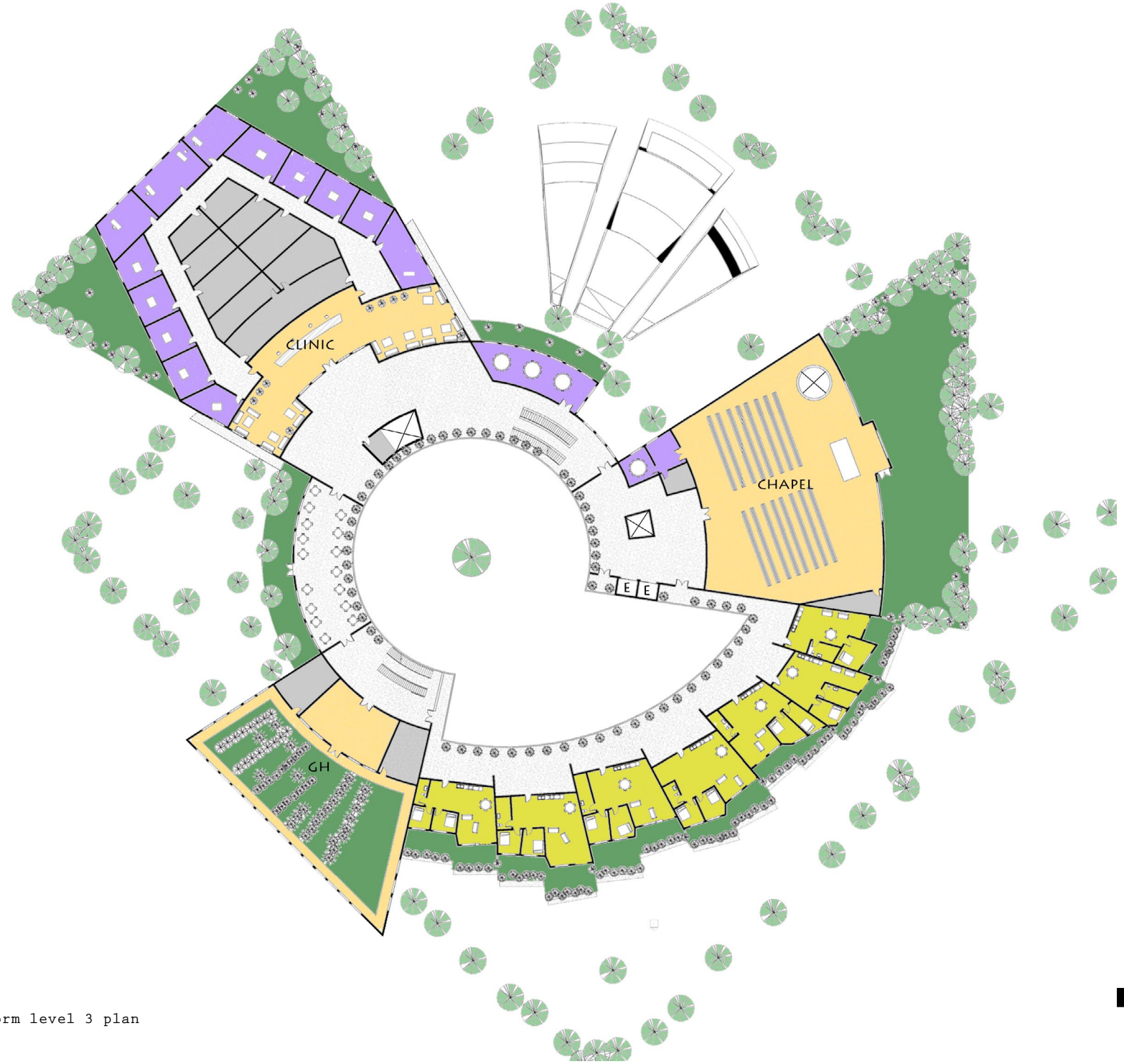


Figure 46: Platform level 3 plan

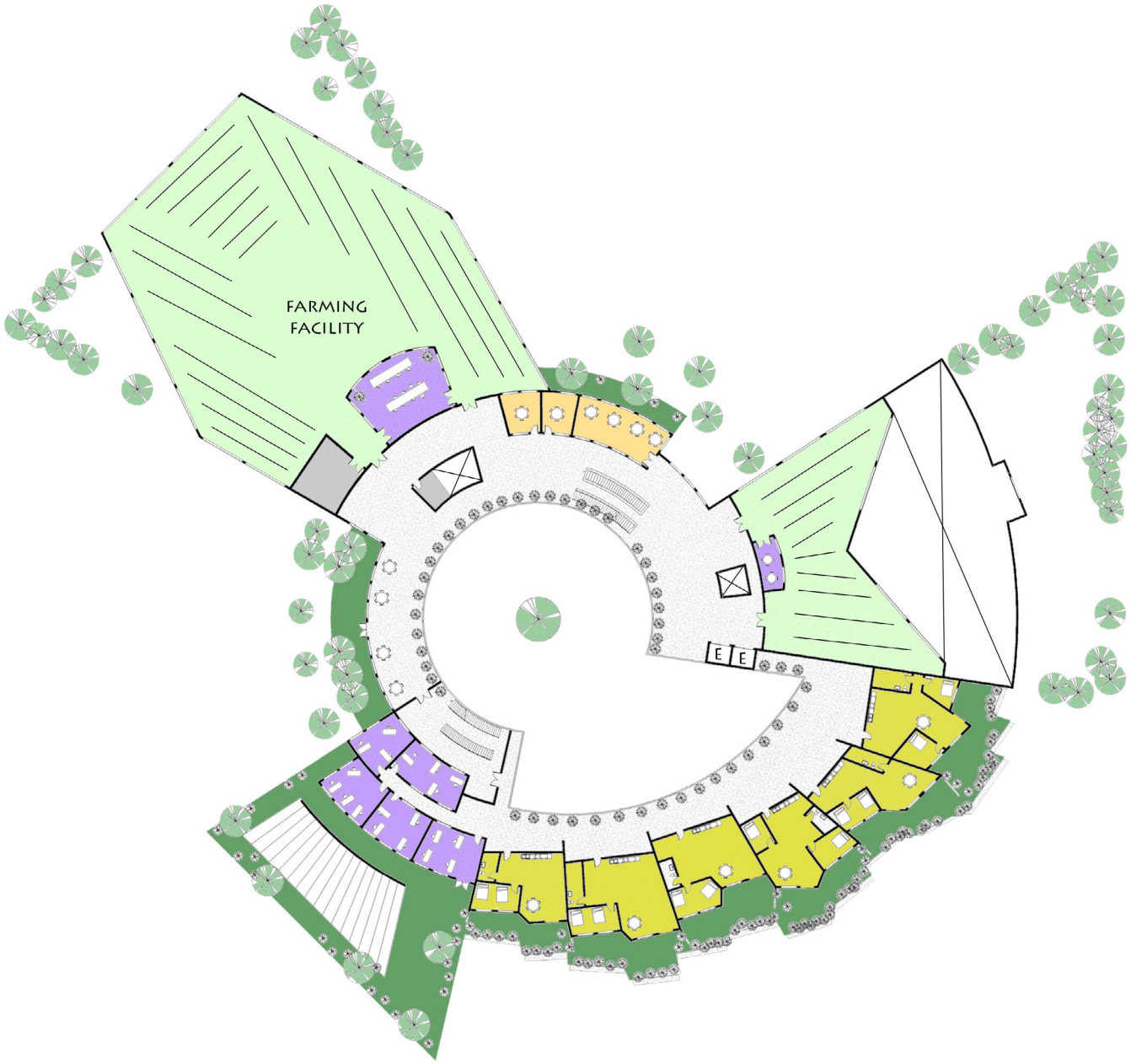


Figure 47: Platform level 4 plan

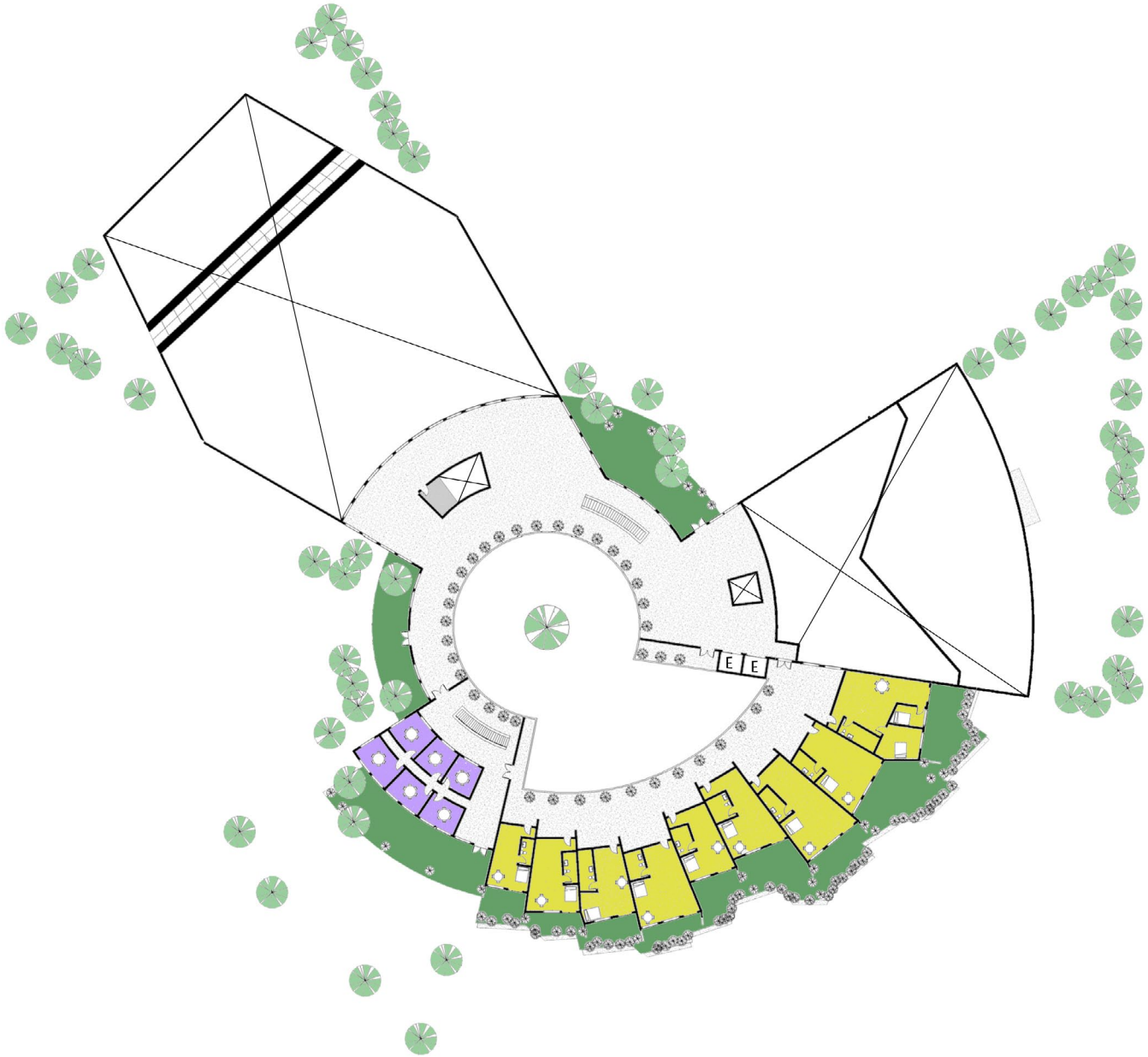
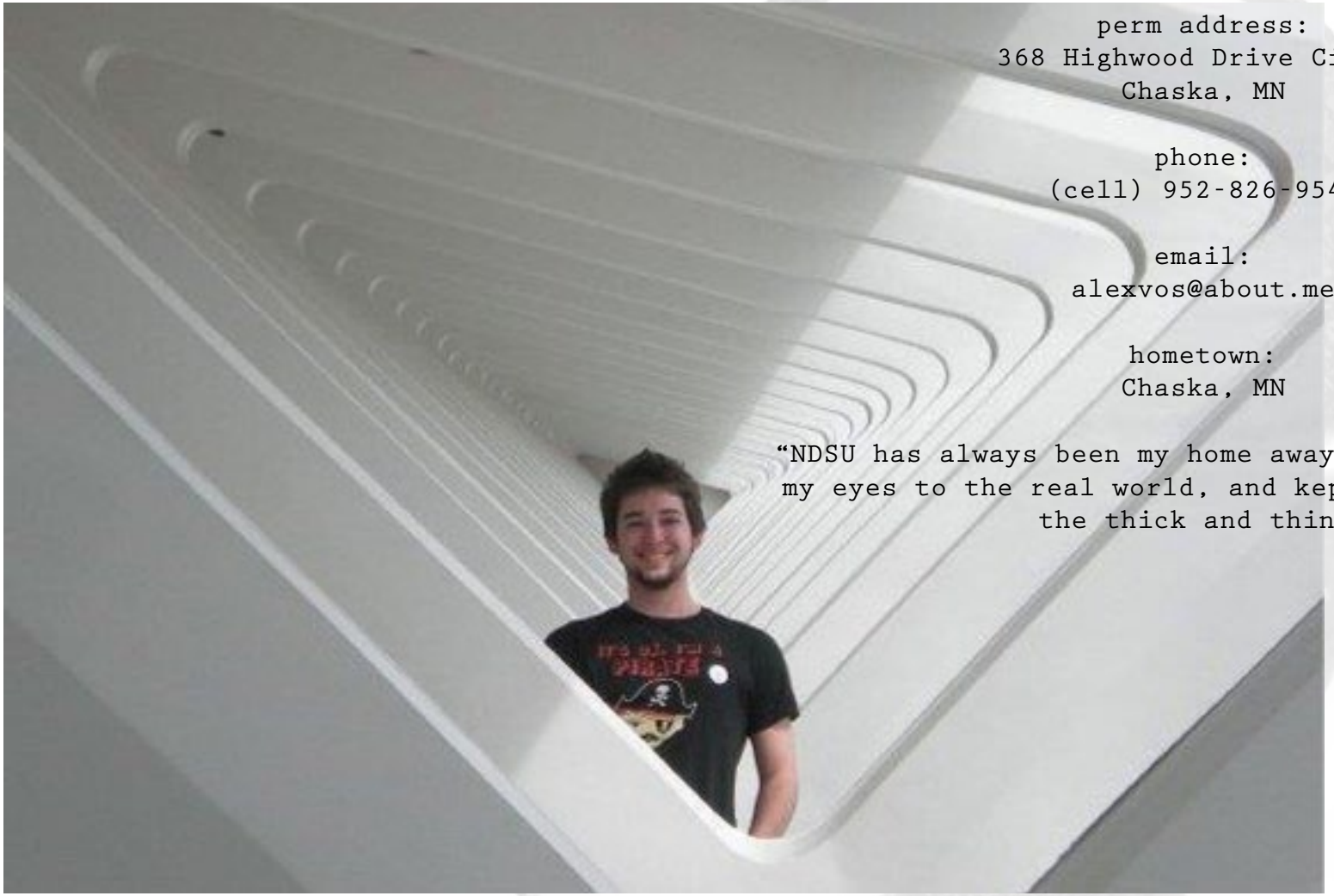


Figure 48: Platform level 5 plan

Personal *Identification*

Profile



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“NDSU has always been my home away from home, opened my eyes to the real world, and kept me sane through the thick and thin.”